APRIL 1949
69th Year

AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING

In This Issue

Arnold Kruckman reports on efforts to awaken the sleeping giant that is called independent American business—on Page 68.

•

Last installment of a series disclosing temperature distribution in a basementless house appears on Page 83. The series adds extensive data to the problem of heating this type of construction.

•

The American Petroleum Institute and American Gas Association have again compiled a report on the nation's fuel reserves. Page 86.

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Low cost metal sheets clad with more expensive metals increase opportunities in sheet metal contracting. A descriptive series starts on Page 103.

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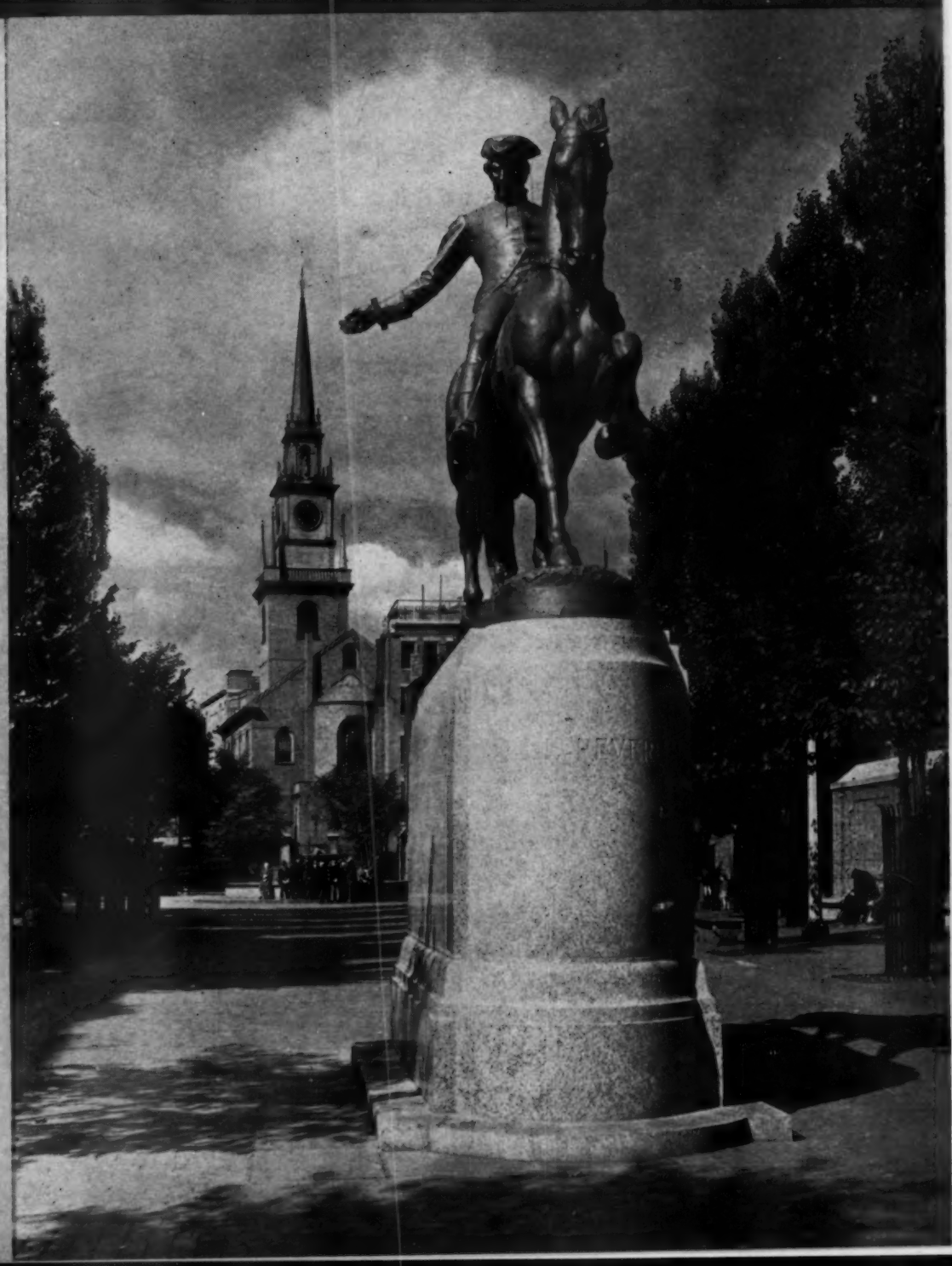
The Cover Picture
Paul Revere and the Old North Church symbolize Boston, scene of the 26th OHI convention.

NATIONAL OIL HEAT EXPOSITION SHOW SECTION ON PAGE 94.



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I

DE-HU-MATIC

II

EVAPORATIVE KOOLER-AIRE

III

KOLD-AIRE

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by L. P. HANSON, M. E.
VICE PRESIDENT, USAIRCO

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A Subsidiary of United States Air Conditioning Corporation
342 Oklahoma Natural Bldg., Oklahoma City, Oklahoma

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AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

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APRIL, 1949

Volume 118, No. 4

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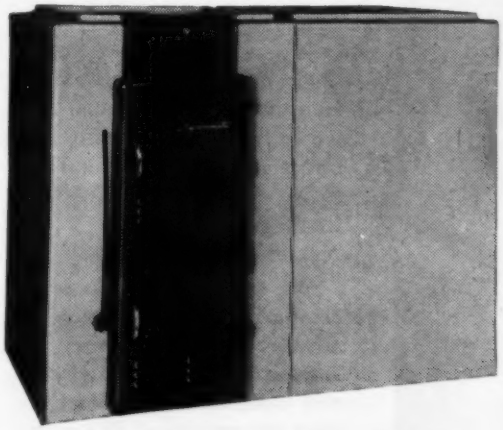

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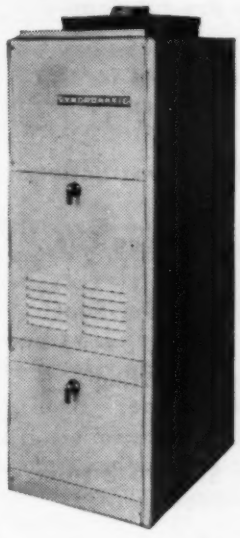
A complete range from 75,000 to 240,000 BTU. All heat exchangers built of heavy 10 gauge corrosion resisting steel. "COUNTER-FLOW" principle as used in all Syncromatic Furnace Units.



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The Syncromatic Oil Fired Unit employs the "COUNTER-FLOW" principle in warm air heating . . . one of the most efficient methods of heat transfer known. Compact and completely welded heavy gauge heat exchanger . . . your best insurance for safety and long life. Just compare the gauge and construction of Syncromatic with any other oil-fired unit.

Syncromatic Corporation

WATERTOWN, WISCONSIN

the editor's notebook

Slide Films

Illustrated are two slide films produced by the National Warm Air Heating and Air Conditioning Association. Each is available to the warm air heating industry for sales and educational purposes—without charge

"A Course at Comfort College"

"It's Comfort They Bought"

Inquiries regarding their use should be addressed to the association's headquarters at 145 Public Square, Cleveland 14, Ohio.

Chimney Stains

There exists in our locality as it probably does all over the country due to modernization of houses, a condition which is fast becoming a major problem.

This problem is the unused, unlined chimney. It seems that over a period of years of use, the gases from burning coal have eaten away the mortar and deteriorated the brick, honeycombing the whole interior of the chimney. Cracks and crevices have filled with soot.

Practically all of the older homes have two chimneys and due to the installation of automatic heating systems, the coal range in the kitchen is being eliminated. This leaves one unused chimney which collects and holds moisture to such an extent that the inside walls are perpetually wet causing black stains from the soot to show on exposed surfaces.

We know that capping the chimney will do no good. Also, removing the chimney above the roof and covering the opening with roofing will not help. In most cases the condition becomes worse if you seal the chimney in this manner.

We hope you have something in your files that will help us with this problem and we will appreciate greatly any information you can send us.

JOHN MAIER
Metlform Co.
Norristown, Penn.

We suggested to this reader that a free circulation of air through the chimney by leaving both the top and bottom open should at least relieve the condition. We invite comments from readers who have experienced this problem.—ED.

Surplus Records

Reports of the Hoover Commission indicate that Uncle Sam could save $30 million to $50 million a year by sorting official records, throwing away useless papers, re-housing essential documents, and setting up a "birth control" system for new records.

The commission found that

"TAILOR-MADE" VITROLINER Type "E" Flue

This complete pre-fabricated Packaged Chimney will take care of all heating equipment and venting requirements. It is supported entirely from the ceiling and roof and requires no brickwork.

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Built as carefully as the finest registers on the market.

Priced in the low-cost bracket.

Valve is smooth as silk in operation . . . stays put in any position desired under all conditions.

No forward-looking installer will use an inferior product, even when hard-boiled competition demands cutting corners, if there's any reasonable way around it. For he knows that the unsatisfactory results remain to "knock" him for years. That's the reason so many installers are turning to the H&C No. 74 registers on the low-cost housing jobs specifying air conditioning.

The workmanship in the No. 74 is equal to the finest registers on the market; the valve is smooth as silk in operation and stays put at any position desired; upward and downward deflection is easily obtained. It's a QUALITY product in every detail — yet priced in the low-cost bracket . . . a register that will really help you land those low-cost housing jobs and still uphold your reputation for quality. See your H&C jobbers or write for our new '49 catalog for complete details. The H&C line contains the ideal register for each and every type of installation.

H&C

HART & COOLEY MANUFACTURING CO. Holland, Mich.

WORLD'S LARGEST MANUFACTURERS OF REGISTERS, GRILLES AND FURNACE ACCESSORIES

In Canada: Hart & Cooley Mfg. Co., Fort Erie, N. Ontario

the editor's notebook

U. S. records now occupy 18,500,000 cubic feet of space.

They would fill six buildings the size of Washington's Pentagon, and they are accumulating at the rate of a million cubic feet per year.

Even space for housing these records costs about $27 million per year. Experts say it takes another $20 million to operate and maintain the buildings.

Officials admit that one-third of these records are useless and could be burned without loss to anyone. A lot of them could have been destroyed when new records were made to replace them, but instead, both new and old records were stored.

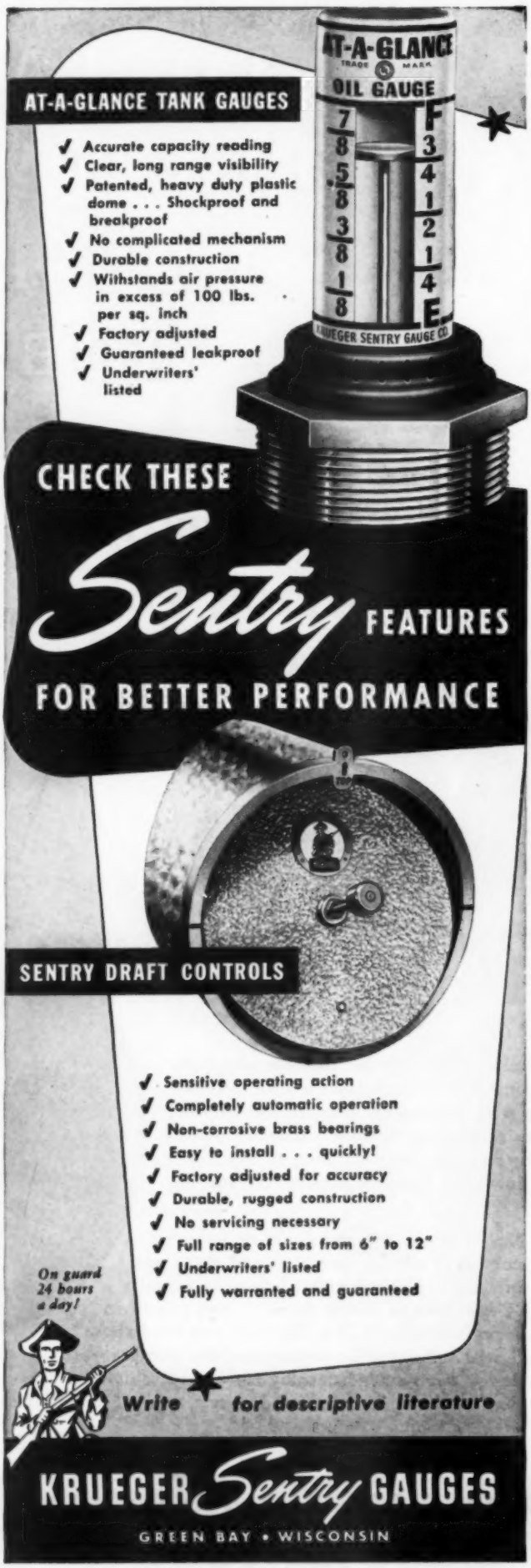
Experts suggest that acres of space could be saved by using microfilm for records important enough to keep. Others, it is said, might be stored in shut-down war plants in various parts of the country.

A lot of people believe the old papers should be cleared away in some fashion before buildings get so crowded with records that there is no room to work.

Local Opportunities

The four-county area around Youngstown, Ohio, is in the midst of a cooperative program to give its schools the truth about the American way of doing business.

The program got under way when some 80 of the largest industrial and business organizations in the area formed the Industrial Information Committee. School interviews revealed that high school seniors, most of whom did not intend to work in the Youngstown area, felt that no opportunities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✓ Factory adjusted for accuracy
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✓ Underwriters' listed
✓ Fully warranted and guaranteed
On guard 24 hours a day!
Write for descriptive literature
KRUEGER Sentry GAUGES
GREEN BAY • WISCONSIN

the editor's notebook

were available there for young people.

Discovering that the students lacked information about their home district, representatives of the schools and three representatives from industry formed an advisory committee to find a remedy. The committee soon learned that practically no written material regarding their own community was available.

The Industrial Information Institute offered to take on a staff writer to produce a truthful series of readers for the schools. Different types of readers, suitable respectively for grades 3 to 12, were outlined.

An English teacher from one of the junior high schools was selected for the writing. The school gave him a leave of absence, and he joined the information committee's staff.

Since then, he has spent his time interviewing citizens, searching through museums, old newspaper files, and libraries for good material. A camera fan, he got many pictures. An art teacher supplied pen-and-ink sketches where no pictures could be obtained. A movie is being planned to summarize the material.

Patent Day

Tuesday is Patent Day.

No matter when you filed or how long you have waited to get your patent, don't expect to have it issued on any day of the week but Tuesday, National Patent Council points out.

The Patent Office in Washington has invented a calendar, different from any other calendar in the world. It looks much like the ordinary calen-

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the editor's notebook

dar except that the little date squares are 12 in a row for the 12 months, instead of seven for the seven days of the week. The name of the month is at the top of the column. The squares underneath tell the dates for the Tuesdays in the month. Eight months in 1949 have four Tuesdays, the other four have five.

When "Pat Pending" has settled his final account with the Patent Office, he can start working on some other idea with the assurance his "pending" patent will be granted on Tuesday four weeks later. Suppose he sends his final government fee of $30 so that it arrives March 17. The patent will be issued Tuesday, April 12, and notice of the grant, the nature of the patent, an illustration and the name of the inventor will be published in the Patent Office Official Gazette of that date.

It's not a law. It's just an old American custom, a custom that began a century ago —in January, 1848. Processing a patent follows this routine because, in the words of the patent rules, "The issue closes weekly on Thursday, and the patents ordinarily bear date as of the fourth Tuesday thereafter."

The Patent Office calendar is as sure as death and taxes.

Come Christmas, come New Year's, come high water or what have you—if it comes on Tuesday, that's Patent Day. Nothing else comes first on that day in the United States Patent Office.

Wants Reprints

I have read the article "Application of Germ-Killing Lamps to Winter Air Conditioning Systems" in the January issue and find that the information contained in it is very helpful in our business.

I would sincerely appreciate receiving an additional 50 copies of this article if at all possible. Whatever the charge may be for these copies, you may send the invoice to the address on this letter. May I hear from you regarding this?

H. O. BERG
H. O. Berg Co., Inc.
Hammond, Ind.

We have reprinted this article as a 4-page folder with a title page arranged according to the specifications of the purchaser. An additional quantity may be reprinted for general distribution to readers provided the number of requests warrants revision of the title page.—ED.

Why Editors Leave Town

In last month's issue, the last sentence of A. J. Horn's letter asking for information about slide films was incorrectly transcribed: " . . . the information and subject of these films might lend themselves to our Payne Furnace Company."

The copy should have read: . . . "the information and subject of these films might lend themselves to our promotional work."

Beg your pardon, Mr. Horn.

In February we published a paper delivered by Everett R. McLaughlin before a Housing and Heating Conference conducted by the School of Engineering and Extension Services, Pennsylvania State College, but inadvertently accredited the School of Minerals.

Beg your pardon, Mr. McLaughlin.

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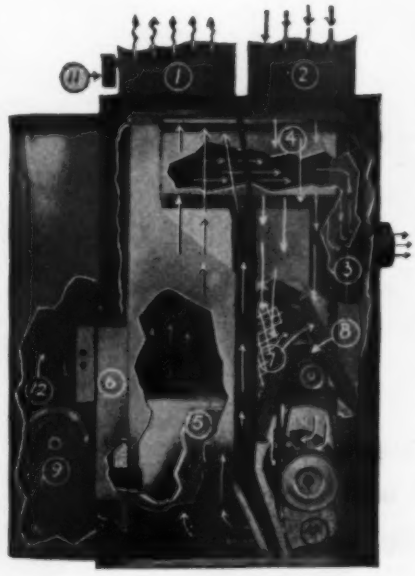
OIL BURNING FURNACES

Quality and Beauty

AT LOW COST!



5 Sizes Counter-Flo Basement Type
66,000 to 200,000 Btu.

2 Sizes Utility Type Hi-Boys
85,000 and 100,000 Btu.

One Gravity Furnace—76,500 Btu.

A SIZE and TYPE for EACH HOME

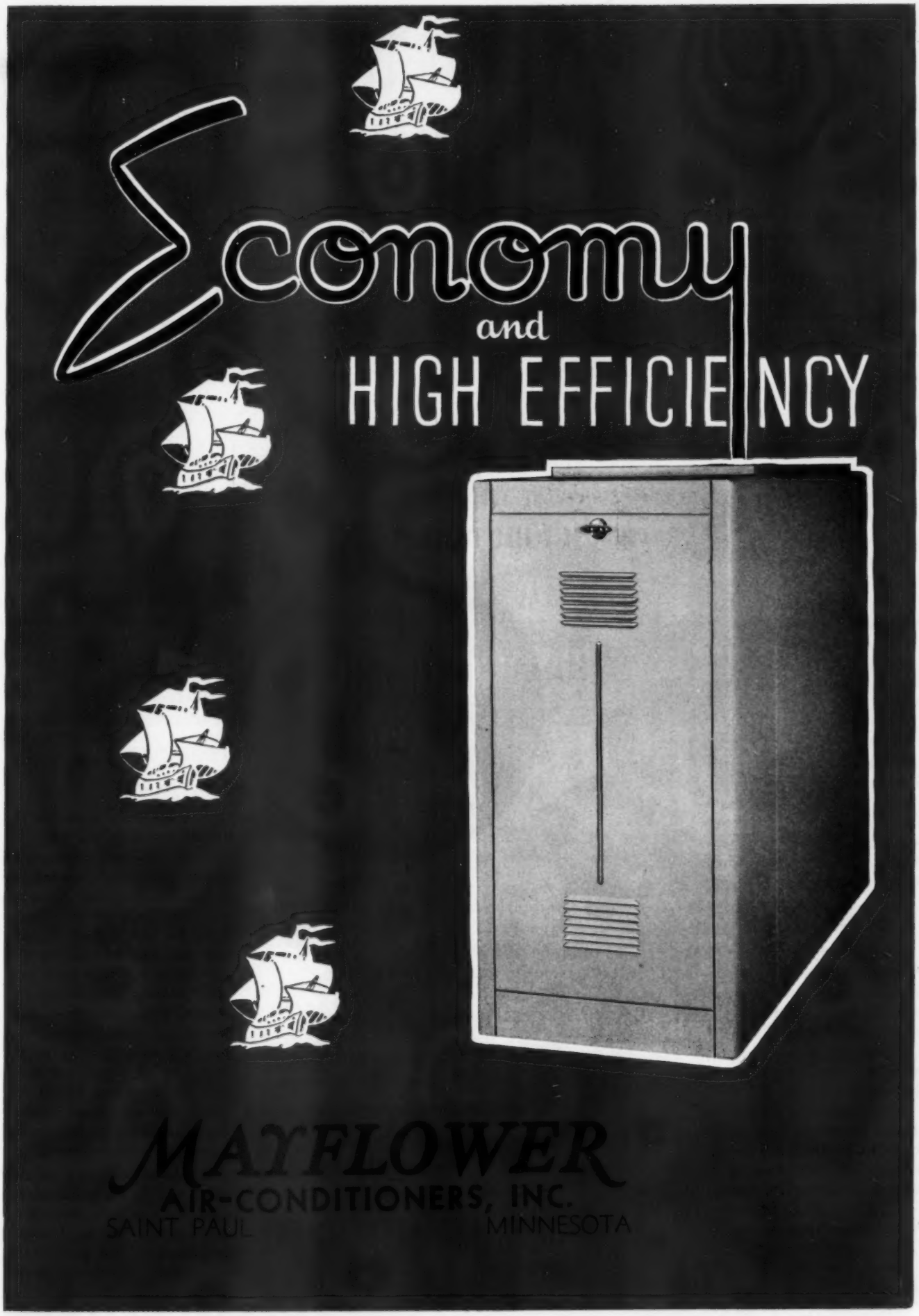
NATION-WIDE DISTRIBUTION

Write—

J. V. PATTEN COMPANY

Sycamore, Illinois

the editor's notebook


Economy
and
HIGH EFFICIENCY
MAYFLOWER
AIR-CONDITIONERS, INC.
SAINT PAUL MINNESOTA

the editor's notebook

As a humorous example of editorial embarrassment, the following seems to justify an editor's hasty departure from the home grounds:

Marjorie E— was bruised when a car struck her. After feeling her all over to make sure no bones were broken, the driver, George B—, insisted on taking her home where he could make a closer examination.—*Ohio paper.*

Wants Heat Pump Information

Perhaps you could help us obtain information in regard an air conditioning unit which incorporates a heat pump.

We have a request from a customer who has a 200 foot deep artesian well in which he wishes to install such a unit.

HOLYOKE SHEET METAL CO.
Holyoke, Mass.

Under the product classification: Air Conditioning Units, Central Plant, Summer-Winter, in the directory section of our January issue, several manufacturers of heat pumps are listed.—ED.

Oil Heating Reprint

In the February issue of AMERICAN ARTISAN you published a very interesting article entitled "Correct Practice in Oil Heating," by J. J. Mirabile. We would like very much to secure three copies of this article.

Is it possible to obtain this article in some form other than that in which it was published? We are thinking of using it in our service manual.

F. C. SCHOTT
Atlas-Butler Furnaces, Inc.
Columbus, Ohio.

Reprints of this series of articles on oil heating will soon be available. We will gladly file requests for reprints and notify each person when they are ready for distribution.—ED.

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COMPLETELY FIRE TESTED

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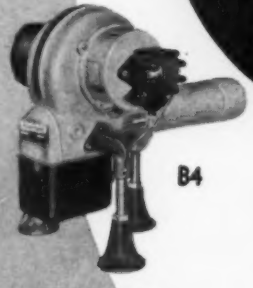

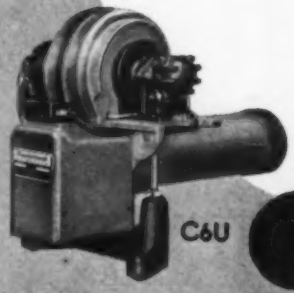

meet all local and state requirements

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SUNDSTRAND ENGINEERING CO.
ROCKFORD • ILLINOIS

the editor's notebook

Panel Heating Performance

We are badly in need of information regarding the heating of residences with crawl spaces or without basements. Have hot water floor panel systems been satisfactory for this type of construction?

When can we obtain an unbiased report on the operation and performance of this type of heating?

There is considerable local interest in concrete slab floors inlaid with copper tubing and if this type of heating has not been found satisfactory, our warm air heating prospects must be given the facts.

RALPH H. BOOR
Hannibal, Mo.

We are fully aware of the urgent need in the field for data about the application of warm air panel heating to floors. Basementless construction and large window areas have become typical of postwar architecture and there is no doubt but that they present heating problems. For several years we have published all suitable editorial material submitted to us relating to all phases of these new architectural trends because requests from readers for information on floor panel have confirmed this need.

Unfortunately, we cannot refer you to an unbiased report because such records of performance often emanate from sources that sponsor the equipment or system under investigation.—ED.

● 200 Mueller Climatrol Type SHP Gas-Fired Winter Air Conditioners are being installed by the Schroedel Construction Company in the Francis J. Schroedel, Inc. Estabrook Homes Project. Milwaukee, Wisconsin.

Compact Design for Closet Installation

The new Type 110 gas-fired winter air conditioner is ideal for low-cost housing and individually-heated apartments. Available in 60,000 and 80,000 Btu input rating capacities; white or green color.

Mueller Climatrol fuel-thrifty Furnaces

. . . engineered to get you big-volume housing-project contracts

● Here's more evidence that the Mueller Climatrol dealer is always in a profitable position. In today's big and expanding market of multiple-unit projects and low-cost housing developments, Mueller gives you equipment that is tailor-made to meet the specifications.

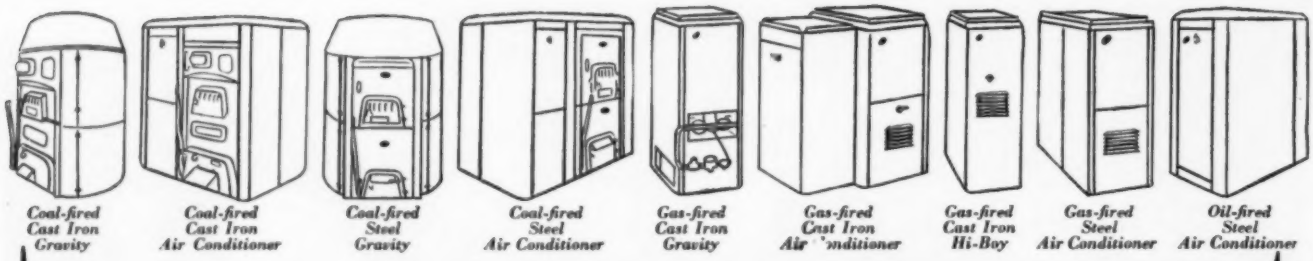
The Francis J. Schroedel, Inc. Estabrook Homes Project is a typical example. It includes 200 individually-heated apartments. Each required a top-quality winter air-conditioner compact enough for utility-closet installation. The answer, of course, was a Mueller Climatrol "high-boy." The result for the Mueller dealer: a big-volume sale.

You can go after the same kind of business in your territory. The complete Mueller Climatrol line gives you the answer to every need — for any fuel. Mueller quality and Mueller's 92-year-old reputation are nationally recognized. In short, you've got what it takes. Go after this profitable Business with the Mueller Climatrol complete line. Get set to sell it by writing us today for full details. . . . *L. J. Mueller Furnace Co., 2010 West Oklahoma Avenue, Milwaukee 7, Wisconsin.*

MUELLER Climatrol

REG. U.S. PAT OFF

B-95



Coal-fired Cast Iron Gravity | Coal-fired Cast Iron Air Conditioner | Coal-fired Steel Gravity | Coal-fired Steel Air Conditioner | Gas-fired Cast Iron Gravity | Gas-fired Cast Iron Air Conditioner | Gas-fired Cast Iron Hi-Boy | Gas-fired Steel Air Conditioner | Oil-fired Steel Air Conditioner

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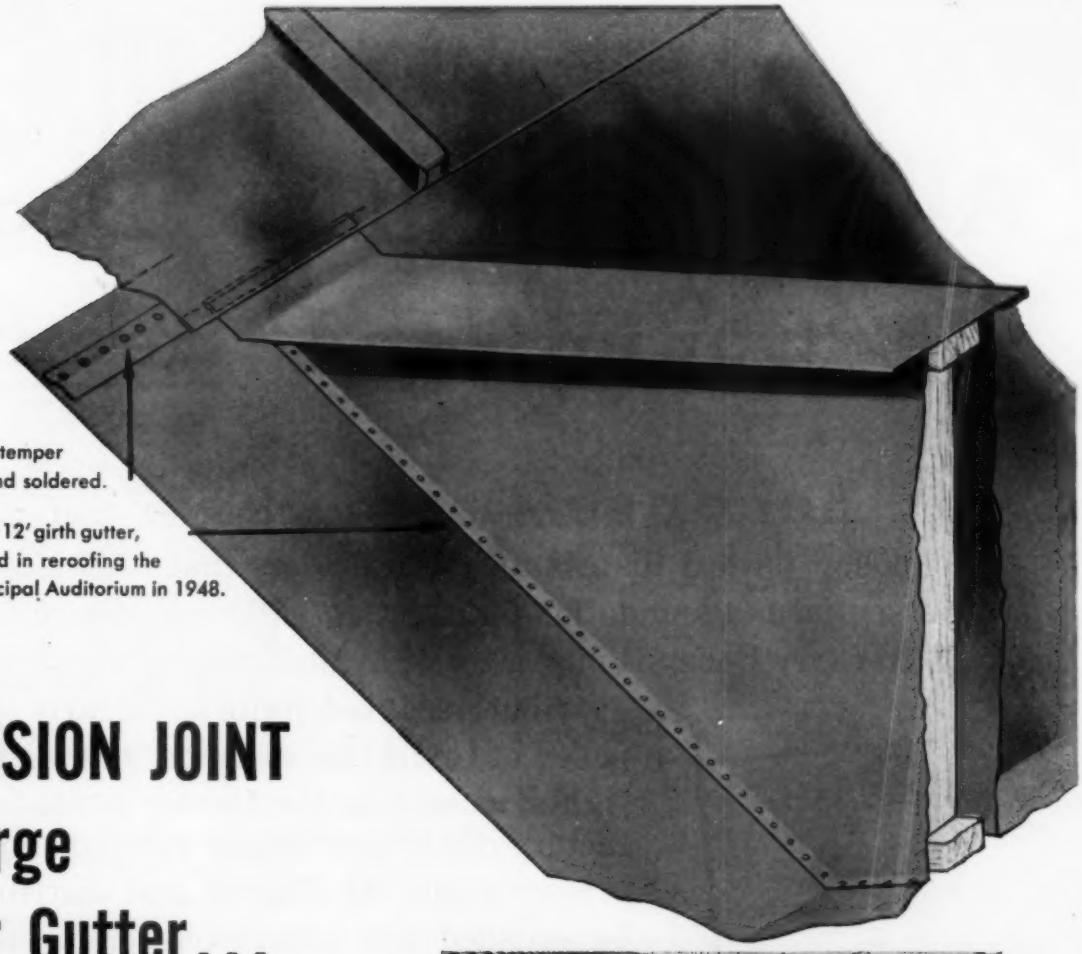
Write for Details

THE RYBOLT HEATER COMPANY

615 MILLER STREET ★ ASHLAND, OHIO



32 ounce cornice temper copper, riveted and soldered.

Expansion joint for 12' girth gutter, similar to that used in reroofing the Philadelphia Municipal Auditorium in 1948.

EXPANSION JOINT for Large Copper Gutter...

THE ABOVE DRAWING shows a method of construction for a giant expansion joint—similar to the ones installed when the Philadelphia Municipal Auditorium was reroofed last year with 90,000 square feet of Anaconda Sheet Copper. At this Philadelphia building, the 12 foot girth built-in bulk-head type gutters and expansion joints are made from 32 ounce copper, cornice temper, with lap seams riveted (with explosive brass rivets) and soldered.

Such joints installed in gutters of this size and design provide suitable allowance for expansion and contraction of the metal. Careful attention to construction details, such as this example, contributes to the extremely long life and maintenance-free service of copper work. The uniform quality and workability of Anaconda Copper makes it easy for craftsmen to follow accepted methods of fabrication in the shop and installation on the job. Consult our Engineering Department on roofing or other sheet metal problems involving copper or copper alloys. 4881

Section of built-in copper gutter at the Philadelphia Municipal Auditorium. Expansion joints can be seen in the background. The 12 foot girth of the gutter is lined with 32 ounce copper, cornice temper, with seams riveted and soldered.

ANACONDA

Anaconda

COPPER

THE AMERICAN BRASS COMPANY

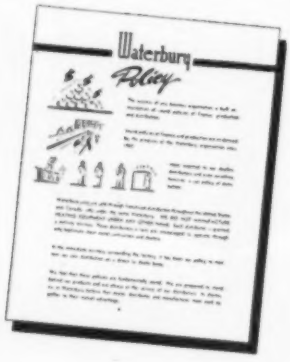
General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS LTD.
New Toronto, Ont.

A Waterbury Dealer Is Sound and Secure

Because—Waterbury believes that a clearly stated policy toward distributors and dealers that is strictly carried out is essential as a foundation for a lasting and profitable relationship. The Waterbury Policy is in print and available to all our dealers and distributors. It is definite and clearly states our policy of protection of dealer and distribution rights, as well as the factory attitude toward factory-distributor-dealer relationships. Waterbury wants its dealers and distributors to be satisfied and prosperous members of the Waterbury family for many years to come!

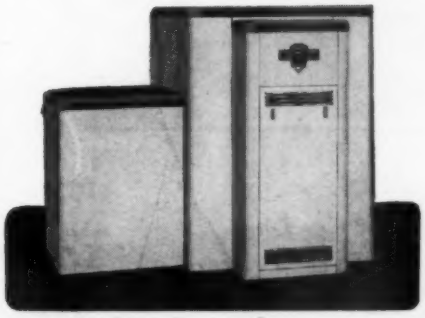


Because—the factory takes an interest in every job. Waterbury believes that every distributor should have resources available to every dealer that will insure satisfactory installation and operation of every unit. The factory should have the means to give real support to this program.

And Because . . .

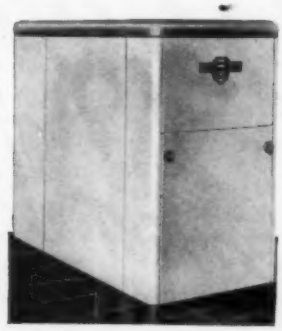
the dealer is supported by an aggressive Advertising and Sales Promotion campaign. Waterbury's national efforts have established consumer acceptance and made sales easier for Waterbury Dealers. The 1949 campaign is now helping dealers' sales efforts throughout the country.

A Waterbury Dealer Can Satisfy Every Customer!



For Every Size Home

Waterbury has a unit for every size home. If your customer wants to heat a cottage — or a large home, church or store — Waterbury can do the job.

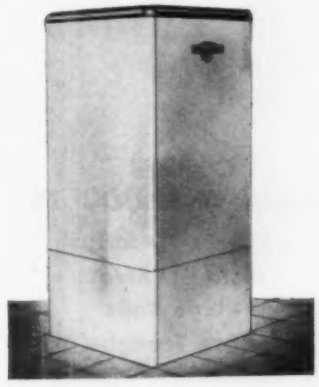


For Every Type of Fuel

Waterbury has a unit to fit your customer's choice of fuel—Coal—Oil or Gas—no matter what size unit he may require.

Regardless of Floor Space—Waterbury has units for basementless homes or homes where basement floor space is at a premium. All Waterbury units are designed for their special purpose.

It's Designed for the Job—All Waterbury units have efficient design — precision engineering — careful manufacturing. Each is backed by a reputation for sound workmanship that has stood the test of over 40 years!



Plus—

THE MASTER BLOWERTROL

We are convinced that this is the best means of achieving true continuous blower operation — it means more satisfied customers — the end of stratification and "Cold 70". Combined with precision-engineered Waterbury Air Conditioners, it is Modern Perfection in warm-air heating.

It's What's Under the Casing That Counts!

THE WATERMAN-WATERBURY CO.

1122 Jackson Street N.E. **Minneapolis 13, Minn.**

So little extra buys the best

Copper Bought Permanent Protection for this Home

LIFETIME
HUSSEY COPPER
Flashing and Roof Drainage

Costs less than you think!

This typical modern home illustrates in color a few of the many points where Hussey Copper gives visual evidence of quality construction, enhances the sales value and gives lifetime durability. By not cutting costs on sheet metal work and plumbing, this small extra investment is repaid many times in the additional sale value of any home. Get lasting value and freedom from complaints by using Hussey Copper building products—"the easiest of all for you to install."

Our 101st Year
1848-1949

HUSSEY

COPPER
BUILDING PRODUCTS

- Sheets • Strips
- Nails • Rivets
- Ridge Rolls
- Eave Troughs
- Conductor Pipes
- Down Spouts
- Flashing • Tubing
- Pipe

C. G. HUSSEY & COMPANY
(Division of Copper Range Co.)
ROLLING MILLS AND GENERAL OFFICES
PITTSBURGH, PA.

Hussey Warehouses carry stocks of Copper and Brass Products for Prompt Shipment

The NEW! NEW! NEW!

Luxaire PRESSURE VAPORIZING OIL FIRED UNITS EXCELL IN EVERY FEATURE!

Tightening 4 screws speedily mounts the completely assembled, factory adjusted burner in its correct position in the furnace.

Luxaire's 1949 line of vaporizing oil fired units are new in every important detail—They are outstandingly new because there is no similar unit on the market that excells them in:

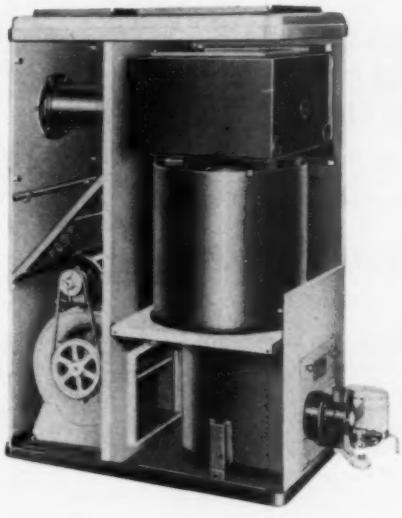
- Extracting all the heat possible from the oil burned.
- Maintaining a uniform, clean flame.
- Dissipating carbon deposits that may accumulate.
- A design that provides a remarkably simple, quick method for inspecting or servicing, if necessary—just remove 4 screws.

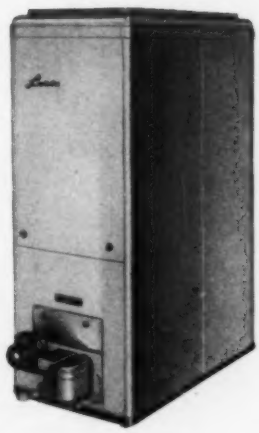
Luxaire heating units are factory assembled—all ready for installing the factory assembled—factory adjusted Pressure Vaporizing Burner. Complete assembly requires just a few minutes with the new burner mounting plate—just tighten 4 screws.

This new Luxaire line "lets-you-in" on the market demand for good looking, high quality—competitively priced, automatic heating units. They are Underwriter Laboratories approved to burn No. 3 fuel oil and lighter domestic grades.

See your Luxaire jobber for complete details.

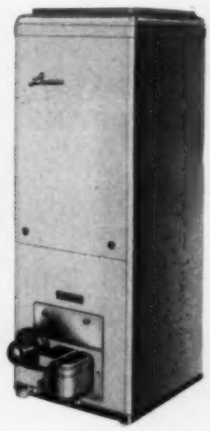
Interior View of Air Conditioning Unit.





No. VA-65
Air Conditioning Unit
76,000 Btu Output

No. VH-75
Utility Unit
75,100 Btu Output



No. VG-61
Gravity Furnace
60,000 Btu at Register

THE C·A·OLSEN MANUFACTURING COMPANY

Luxaire HEATING & AIR CONDITIONING UNITS

ELYRIA 12, OHIO

LAU

QUICKER...EASIER PROFITS
New Business for You!

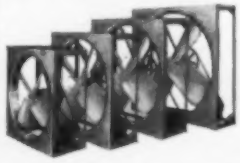
YOU'LL AGREE WHEN YOU SEE

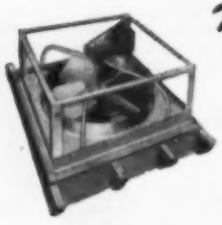
The FINEST LINE *for 49!*

ALL NEW FAN LINE

Niteair PANEL UNITS

...newly designed and ruggedly constructed. Four sizes, 30″, 36″, 42″, 48″, with discharge capacities for every requirement.



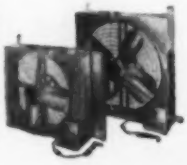


Niteair RANCHER

. . . especially designed for homes of low roof type construction. Two sizes, 30″, 36″, with outstanding features and performance.

Niteair WINDOW FANS

. . . the perfect heat relievers for all homes, offices and apartments. Two sizes, 24″, 30″. Simple . . . quick . . . easy to install in ANY window in a moment.

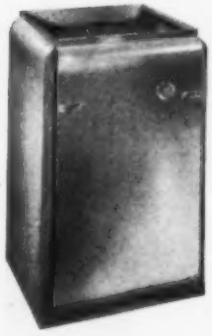


LAU 18″ PORTABLE & WINDOW FAN

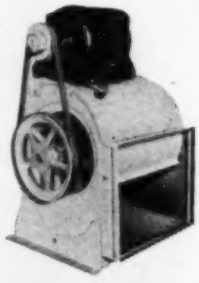
. . . Amazing all-around performance. Use it anywhere . . . any time! Wonderful cooling results.

LAU Products are indeed the finest and best buy on the market for '49. New handsome designs . . . improved performance . . . superior construction . . . certified ratings all add to the desirability of these outstanding units. Their cost is exceptionally low because they are mass-manufactured for competitive selling. For economy of operation and long, trouble-free service, they can't be beaten. For quicker . . . easier profits, Lau products lead the field. They're "The Finest Line for '49." Get your order in today!

NEW PACKAGE UNIT



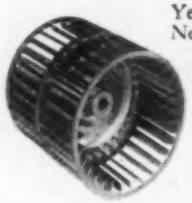
LAU Series 9000 "Package" Blower-Filter Unit . . . Handsome new all-metal casing . . . improved inside and out . . . incorporating many superior mechanical features.



IMPROVED BLOWER ASSEMBLY

LAU Series A Blower Assembly . . . the finest, lowest priced unit on the market. Highly efficient . . . sturdy all-weld construction. Complete range of sizes.

NEWLY DEVELOPED WHEELS



Years ahead of any wheel on the market, the New LAU Series "A" blower wheel has proved its great strength and performance in actual use. Features center suspension, precision balance, all parts die stamped. Single and double inlet wheels 5″ to 30″ diameter for oil burners, stokers, furnaces, air conditioning units.

Certified Ratings

Write Today Dept. "A" For Complete Information

THE LAU BLOWER *Company*

DAYTON 7 OHIO U S A

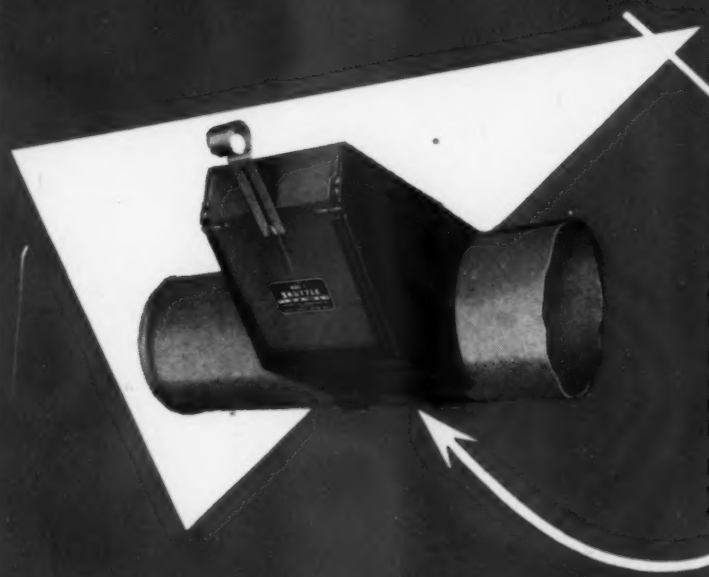
MEMBER NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION INDOOR COMFORT

WORLD'S LARGEST MANUFACTURER OF FURNACE BLOWERS

NEW—SCIENTIFICALLY DESIGNED

Skuttle "WINDMASTER"

BAROMETRIC DRAFT CONTROL!



- BETTER CONTROL
- EASIER INSTALLATION
- MORE PROFIT

Square opening and patented angle mounting vanes provides more uniform opening with larger effective area. Tested characteristics show a flat curve, assuring even, effective control—efficient operation at all draft values. See the test chart—it shows definite superiority.

Exceptional simplicity of design and sturdy construction enable you to offer your customer higher quality at lower cost and better profit.

Installation is exceptionally easy—ask your jobber. Available in 6", 7", 8" and 9" pipe sizes.

AIR CONDITIONING MEANS HUMIDIFIED AIR FOR MORE EFFECTIVE HEATING—SELL SKUTTLE SERIES 600 HUMIDIFIER

Comfort—effective heating—demands good humidification. Without proper humidity, a home feels chilly unless overheated at high fuel cost. Throats get dry and respiratory diseases increase. A humidifier is as necessary as a filter in forced warm air heating. Skuttle Series 600 Humidifier provides better humidification. Self-flushing—self-cleaning—has the patented Vapexide plates that absorb 70% more water. The patented valve has an industry-wide reputation for lasting. Made of copper and brass—it's a quality, trouble-free item. Your jobber stocks Skuttle Humidifiers and Draft Controls.

Skuttle

THE SKUTTLE MANUFACTURING COMPANY • 4099 BEAUFAIT AVENUE • DETROIT 7, MICHIGAN

Adding the Alloy... which helps to give TONCAN IRON the highest rust-resistance of all ferrous materials in its price class. Made from highly refined open-hearth iron, TONCAN IRON is the *only* metal of its type which contains *two* alloying elements—copper (twice as much as in copper-bearing steel), and molybdenum to bring out the full effectiveness of the copper.

For more than 40 years, TONCAN IRON has proved its durability and economy in all types of sheet metal work. Today, although supplies are limited, it still is a favorite wherever sheet metal is used. See Sweet's Architectural File or write for informative literature. Republic Steel Corporation, General Offices, Cleveland 1, Ohio. Export Department, Chrysler Building, New York 17, New York.

Republic

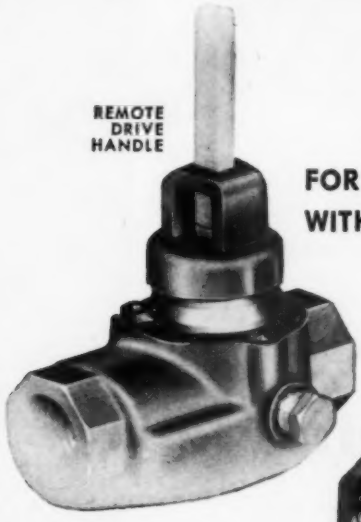
REPUBLIC STEEL

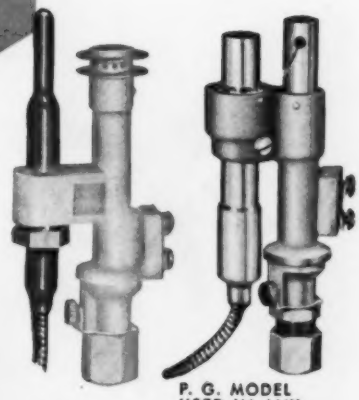
TONCAN COPPER MOLYBDENUM IRON

—for ducts, gutters, conductor pipes, roofing, siding, tanks, ventilators, skylights, hoods and other sheet metal applications requiring rust-resistance—and for corrugated metal drainage products.

100% Safety

SINGLE ROTARY ACTION
FOR OPERATION OR RESET LIGHTING
WITH GAS COCK IN "OFF" POSITION

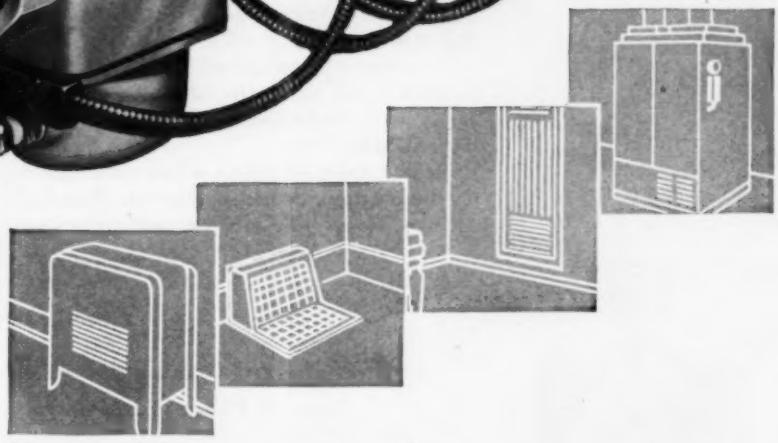




NEW

MR-2-5

GAS COCK
SAFETY VALVE



ALL-IN-ONE . . . Combining *automatic 100% safety shut-off* with manual control valves for main burner and pilot.

ONE HANDLE controls main burner valve, pilot valve and manual safety reset. Handles for close or remote operation available.

REDUCED COST of installation with only one valve and one handle. For space and unit heaters, central and floor furnaces using natural, manufactured, mixed or liquefied petroleum gases.

Either *Single Couple* or *Pilot Generator* operated models available.

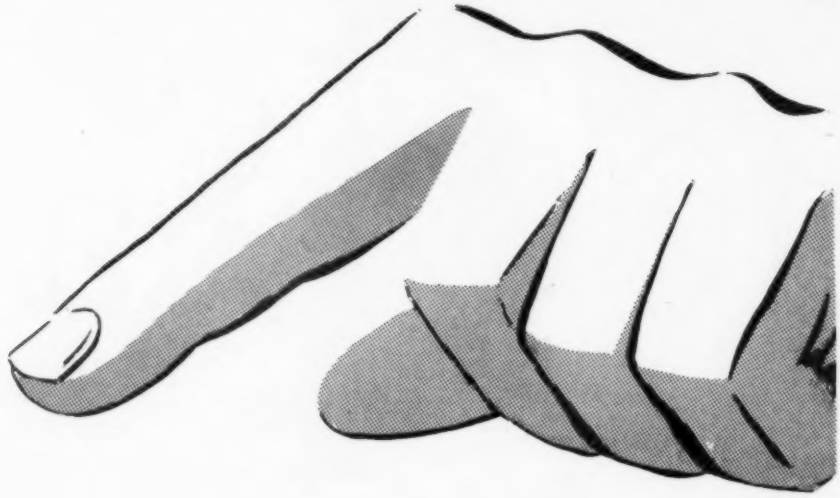
For complete specifications request Brochure SDL 2R-4

GENERAL CONTROLS

Manufacturers of Automatic Pressure, Temperature, Level & Flow Controls

Factory Branches: Birmingham (3), Boston (16), Chicago (5), Cleveland (15), Dallas (2), Denver (10), Detroit (8), Glendale (1), Houston (6), Kansas City (2), New York (17), Oklahoma City (1), Philadelphia (40), Pittsburgh (22), Seattle (1), San Francisco (7), St. Louis (12)

DISTRIBUTORS IN PRINCIPAL CITIES 59-1

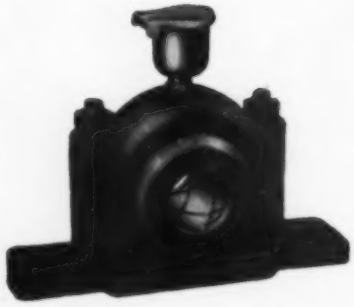


You're responsible when a bearing lets go

When a pounding shaft ties a heating system into knots, legal liability has nothing to do with the case. Your customer pins the responsibility squarely on *you*, the man who specified and installed the bearing that didn't stand up.

Don't take chances when you specify bearings. Standardize on Randall Pillow Blocks. They're self-aligning, self-lubricating, longer-lasting pillow blocks that keep shafts running quiet and trouble-free for the life of the equipment.

Randall's new, lower priced *Sintered Bushing* Pillow Block Series and revised specifications give you a complete selection of pillow block types and sizes in a wider price range than ever before.



NORMAL DUTY PILLOW BLOCK

For general service.

Double-lubricated, **with graphited, phosphor bronze bushing in wool-felt-packed oil reservoir housing. For shafts 1¼" to 3 15/16", inclusive.**

One of six pillow block types in the complete Randall Line.

New - Free

Write for Catalog 49, with complete data on all Randall Pillow Blocks and exclusive design features.

RANDALL GRAPHITE BEARINGS, INC.

609 West Lake Street, Dept. 411, Chicago 6, Ill.

DISTRIBUTORS CARRYING STOCKS

THE BROWN BEARING COMPANY
Portland 9, Seattle 4

MOFFATT BEARINGS COMPANY
Philadelphia 30, Baltimore, Richmond, Charlotte, Atlanta, Birmingham

TEK BEARING COMPANY
Albany, Boston, Bridgeport, Newark, New York, Providence, Waterbury

SALT LAKE HARDWARE COMPANY
Salt Lake City 9

SYRACUSE BEARING COMPANY
Syracuse 2, Buffalo 8, Niagara Falls, Rochester 13, Utica

EDWARD D. MALTBY COMPANY, INC.
Los Angeles 15, San Diego, Phoenix, Honolulu

THE BERRY BEARING COMPANY
Chicago 16

C. W. MARWEDEL
San Francisco, Oakland

CANADA

DOMINION BEARINGS, LTD.
Toronto 14, Montreal, Winnipeg

PUMPS & POWER LTD.
Vancouver

CUBA

GOYANES Y ALVAREZ
Havana

SALL MOUNTAIN COMPANY

Asbestos

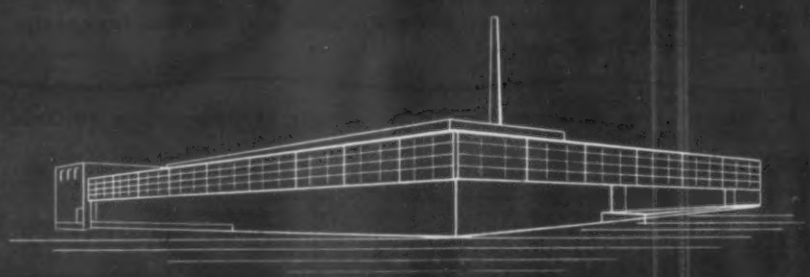
UTILITY SERVICE ECONOMY

SINCE the year 1886, when Sall Mountain Company was founded, this company has taken a leading position in manufacturing Asbestos Products and in the fitting of asbestos to an ever widening field of industrial uses.

The latest in advance equipment is of course, important, but most important is the long years of Sal-Mo experience in solving problems involving the use of Asbestos.

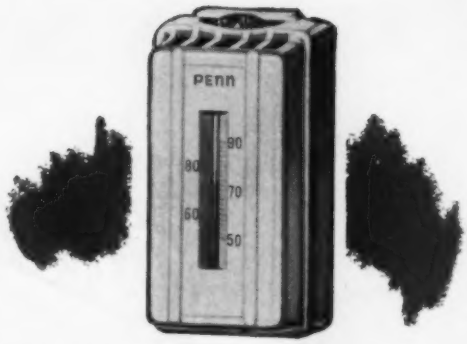
SALL MOUNTAIN COMPANY

ANdover 3-2414 • 176 W. Adams St. • Chicago 3



At our mills we have the latest improved and highly specialized equipment and machinery for processing Asbestos and Asbestos Products.

"After 15 Years Experience with PENN Controls They are *Still Tops*"



Yes, after 15 years experience with Penn Heating Controls, Marvin Guenther says, "They are still tops."

Before forming the M. B. Guenther Company wholesale business with his brother two years ago, Marvin Guenther was in the retail heating business. And, when he speaks of the dependable accuracy of the Penn thermostat, he's speaking from years of experience servicing all kinds and makes of heating controls. He's known for years that Penn, *the first practical two-wire heat anticipation thermostat,* makes satisfied customers because it holds temperature within one-half degree of the selected level.

Mr. Guenther knows this close temperature control means home comfort with freedom from "cold 70" and overheating. Like other heating men, he prefers the simplicity of the two-wire installation . . . the customer-satisfaction and the all-around reliability of Penn thermostats.

Your customers, too, will appreciate the extra comfort and dependability assured by the Penn heat anticipation thermostat. Profit by the experience of other heating men . . . standardize on Penn controls for all your installations. **Penn Electric Switch Co., Goshen, Indiana.** Export Division: 13 East 40th St., New York 16, U.S.A. In Canada: Penn Controls Ltd., Toronto, Ont.

Here's What Penn Heat Anticipation Does . . .

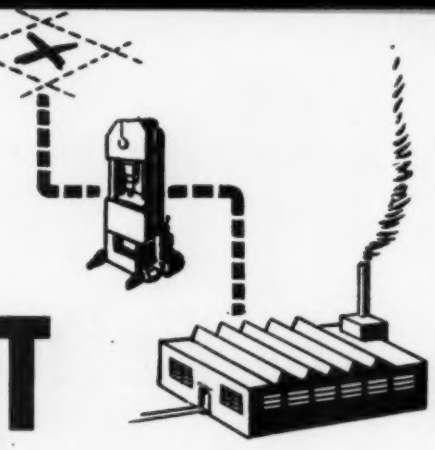
* **Holds the temperature within one-half degree of selected level.**
* **Avoids "cold 70"; ends discomfort of "zig zag" heating.**
* **Automatically compensates for outside weather conditions.**
* **Provides more frequent, short burner operations instead of longer runs and standby periods, assuring even flow of warmth for greater comfort and fuel economy.**

It "hugs" the selected level for closer temperature control

PENN AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES

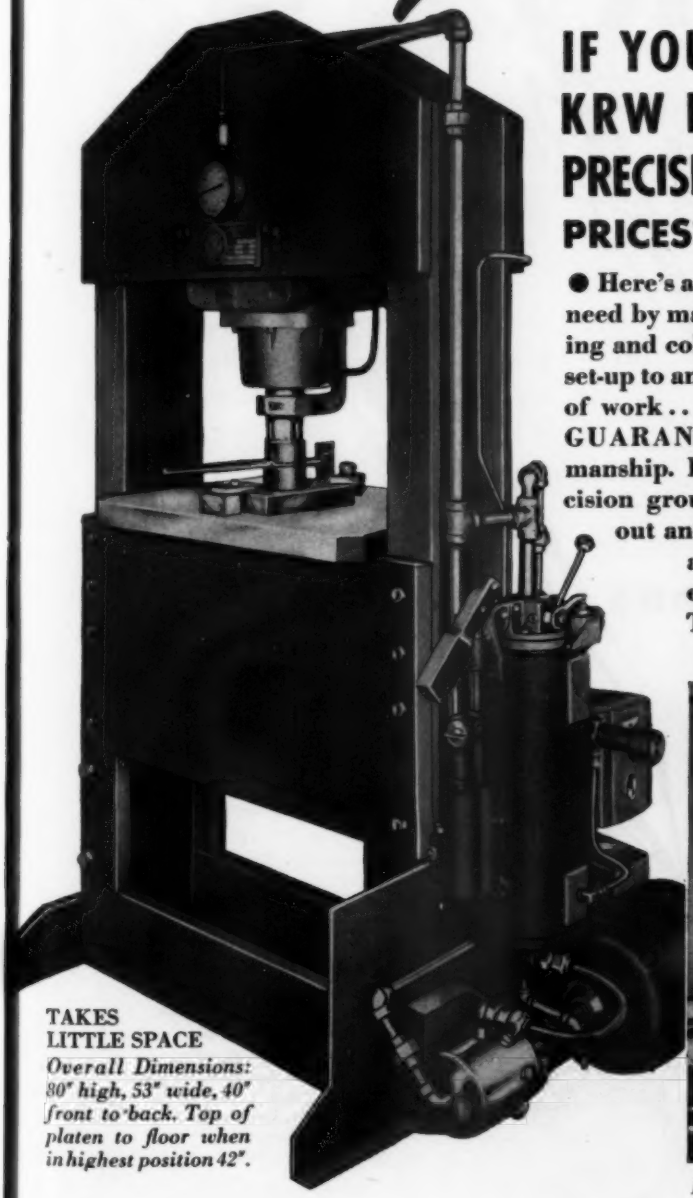
There's a PLACE *for this* PRESS *in Your* PLANT



IF YOU WORK WITH METAL, THIS NEW KRW FORGING AND FORMING PRESS IS PRECISION-BUILT FOR LONG OR SHORT RUNS

PRICES* RANGE FROM ONLY $1850 TO $1910!

● **Here's a brand new dual purpose Hydraulic Press that fills a long felt need by many plants. This new 75-ton press can be used on many forming and cold forging or pressing operations. It is easily shifted from one set-up to another; can be used with inexpensive dies to do a wide variety of work . . . relieving heavier equipment for other work. The press is GUARANTEED for ONE YEAR against defects in material or workmanship. Here are some of its features: adjustable bed, platen is precision ground. Equipped with 2-speed built-in hand pump for die try out and delicate pressing. Mechanite Cylinders precision machined and honed to mirror finish. Guided ram to prevent ram swiveling. Get the facts about this latest KRW press development. There's a place in your plant where it can save you money.**



TAKES LITTLE SPACE
Overall Dimensions: 80" high, 53" wide, 40" front to back. Top of platen to floor when in highest position 42".

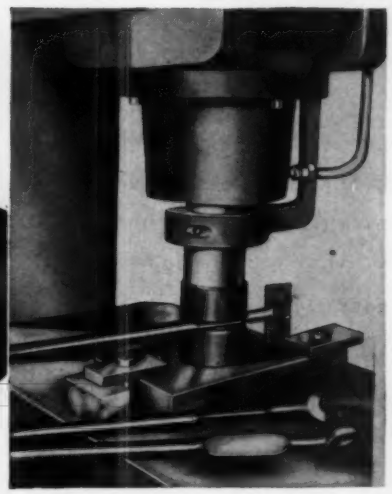


Illustration shows the press being used to cold form an automotive valve lifter.

BRIEF "SPECS"

- Standard Model, Series 3700-F, 75-tons.
- 6" ID Cylinder, 7¼" stroke.
- Platen 30"x18"x2", adjustable in 4" steps.
- Daylight 6" Min. to 18" Max.
- Frame Heavy welded steel.
- 11" stroke cylinder available in air return or double acting types.
- Ram Travel Speed varies from 1" per 3.5 seconds to 1" per 2.6 seconds depending upon capacity of hydraulic equipment selected.
- *Delivery:* Standard models one week.

* Depending upon capacity and size of hydraulic equipment and motor required. F. O. B. Factory.

MAIL COUPON TODAY FOR ALL THE FACTS

K·R·WILSON

215 MAIN ST. · BUFFALO 3, N. Y.

K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

Please quote me prices and information on your new 75-ton Series 3700-F Press.

Name .....

Address .....

City and Zone ..... *State* .....

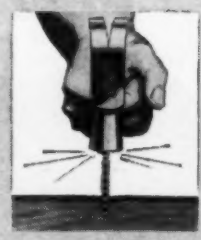
Fastening sheet metal to wood ...to masonry?

For the better way ...rely on P-K

Hardened

PARKER-KALON SCREWNAILS

Screw strength and nail speed in one fastening — makes sense, doesn't it? Yes, and it makes savings, too, in time and materials. Parker-Kalon Screwnails are *hardened* . . . pierce metal that would bend ordinary nails. And they have over 4 times the holding power! When you drive one, you know it will *stay*. Often that means fewer screwnails needed to do the job.

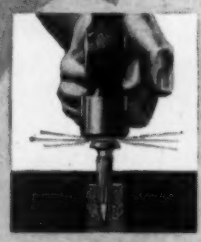


DRIVE LIKE NAILS
HOLD LIKE SCREWS

Hardened

PARKER-KALON MASONRY NAILS

You simply drive them with a hammer into a drilled hole of the proper size. Saves work as well as time and money. Parker-Kalon Hardened Masonry Nails can be applied more quickly than lead anchors and expansion bolts, hold securely and cost less. In comparatively soft masonry, these simpler, faster fasteners can be driven without drilling holes.



SIMPLER, FASTER — LOWER COST

SEND FOR THIS BOOKLET

It tells how and where to use P-K Screwnails and Masonry Nails, gives complete details, including information on punches and masonry drills. Write for your copy. Free samples, too, on request. Parker-Kalon Corporation, 200 Varick St., New York 14, N. Y.

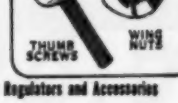
P-K®

The Original

PARKER-KALON SELF-TAPPING SCREWS

FOR EVERY METAL AND PLASTIC ASSEMBLY

P-K Also Makes *Cold-forged*



OTHER P-K PRODUCTS: Cold-Forged Socket Screws, Wing Nuts, Thumb Screws • Hardened Screwnails and Masonry Nails • Shur-Grip File and Solder Iron Handles • Metal Punches • Damper Regulators and Accessories

THE *Comfort* LINE FOR '49:

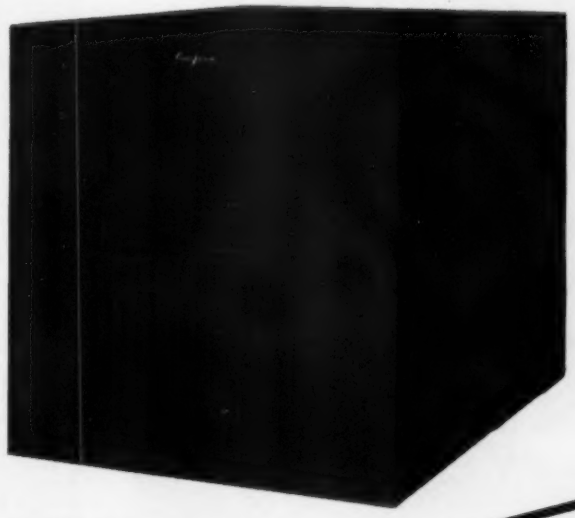
Distributors—Dealers—Users acclaim,

"It's the Leader!"

The COMFORT Air-Washer steals the show wherever it's seen! This "King of the Coolers" is doing the right cooling job in all types of commercial and industrial applications. Included are: Chain stores, restaurants, garment factories, flower shops, etc.

NOW: Standard Equipment on the entire Comfort line: BONDERIZED Fiberglas* FILTERS which mean greater absorption . . . higher efficiency . . . freedom from odors.

*Registered

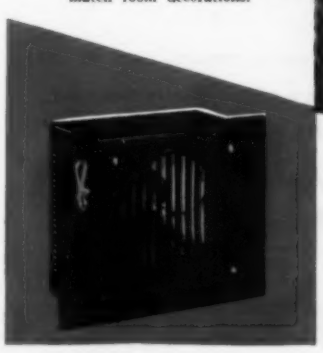


AIR-WASHER assures a 100% fresh air change every few minutes, season-after-season.

NEW for '49: The 20-E (2,000 CFM) blower type window cooler which requires but 8 inches inside window space. * *

ALSO: 3 models (2,000 CFM) fan-type window coolers with or without pumps. New design increases output, reduces noise level. * *

**Finished in pastel colors to match room decorations.



COMMERCIAL AND INDUSTRIAL USERS say, "this is it!" The Comfort Air-Washer is an eye-opener. It's better 8 basic ways: Unique water-flinger, stair-stepped filter pads (of fiberglas) and all-steel construction are but a sample! Let us tell you more about it!

COMFORT PRODUCTS CORP., Dallas, Texas

I would like to have you give me complete information regarding the Comfort line for '49.

I am a dealer ☐ I am a distributor ☐

Name_____ Title_____

Street_____

City_____ State_____

COMFORT PRODUCTS CORP.

2220 LAMESA • DALLAS, TEXAS

The best buy for your customers

the best bet for you . . .

STAINLESS STEEL for roof drainage

Now at last you can give your customers what they've always wanted —roof drainage equipment that they can put up and forget.

For well-made Stainless Steel gutters, downspouts, conductor pipes and flashing are *really* permanent. They last as long as the building stands. They won't rust or corrode. They will not discolor adjacent areas. They never need painting. They end repair and maintenance worries. With Stainless, *first cost is final cost!*

Despite its superior qualities U·S·S Stainless construction costs no more

It's a fact. Actually the *material* cost of Stainless for drainage may even be slightly lower than that of other metals. That's because Stainless Steel weighs about 10% less per square foot than the non-ferrous metal used for quality jobs in the past. This means that, gage for gage, you get 10% more useable material with Stainless.

Cost is further reduced because Stainless Steel, when formed, has twice the strength of most other metals used for roofing purposes. Thus Stainless can be used with perfect safety in *lighter* gages, not only for residential work, but also for "tough" commercial and industrial jobs that in other metals call for heavy thickness.

Give them Stainless and you give them the best—by far the cheapest in the long run.

Fabrication is easy--and U·S·S Stainless is available

Fabrication of these comparatively simple forms presents no special problems. The usual sheet metal shop equipment is adequate and practices are similar. The additional stiffness of Stainless causes little difficulty because gages used are usually thinner than those customary in other materials. For most applications, 26 gage is recommended.

U·S·S Stainless Steel sheet and strip are readily available now. The proper grade—U·S·S 18-8, Type 302—is stocked by most warehouse suppliers and by United States Steel Subsidiaries. If you want further information, write to Carnegie-Illinois Steel Corp., 2059 Carnegie Bldg., Pittsburgh 30, Pa. for our catalog "Roofing Products of Stainless Steel," now in preparation, and we'll put you on the list for an early mailing.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO

COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM

UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

9-186

UNITED STATES STEEL

Viking

BLOWER-PACKAGES and HUMIDIFIERS always go together

For best results they should *always go together* on every job . . . the Viking-Blower-Package and Viking Humidifier. This two-in-one deal means a double profit for the dealer and creates greater customer comfort. No kick-backs and no call-backs to spoil your profits. And . . . you don't have to waste your time in shopping around. Just go to one jobber to get both.

Do you get the "Viking News & Views" which goes to 16,000 readers? If not, ask us to put you on the mailing list. You might be in time to win the $50.00 which is in the "kitty" now.

VIKING AIR CONDITIONING CORP.

5600 WALWORTH AVE., CLEVELAND 2, OHIO

VIKING AIR CONDITIONING CORPORATION
5600 Walworth Ave., Cleveland 2, Ohio

- ☐ Put us on the list to get "Viking News and Views."
- ☐ Let's have the dope on Blower Packages.
- ☐ We're interested in Humidifiers too.

Name .....

Address .....

City ..... *State* .....

LISTED—APPROVED

DRAVO *Counterflo* HEATERS

These two impressive seals, borne* by Dravo *Counterflo* Heaters, certify conformance with rigid official safety standards—and so are highly important to every heating contractor and every user of heating equipment.

But there's another *unofficial* seal that every Dravo *Counterflo* Heater carries—the stamp of enthusiastic approval of satisfied users. The biggest names in American Industry are among the long list of customers . . . and the many re-orders, to take care of new structures and replacement of other outmoded equipment, are completely convincing evidence of the efficient, economical, comfort-dispensing way these heaters do their jobs. For details on sizes, efficiencies, specifications, etc., ask for Bulletin LO-523.

DRAVO
CORPORATION
DRAVO BUILDING, PITTSBURGH 22, PA.

*Gas fired Heaters bear AGA and UL Seals. Oil fired Heaters bear UL Seal.

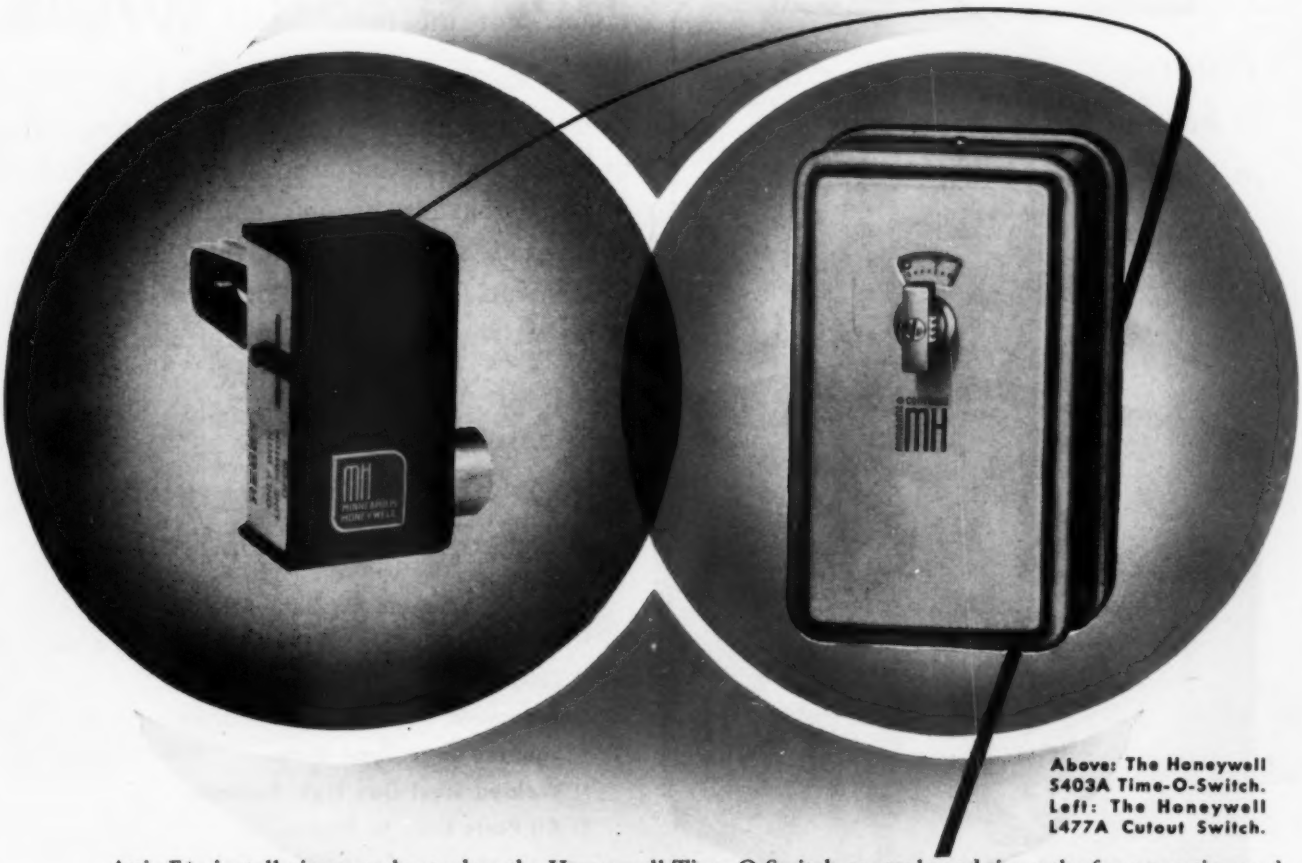
PITTSBURGH · CLEVELAND · PHILADELPHIA · DETROIT · NEW YORK · CHICAGO · ATLANTA · BOSTON

Sales Representatives in Principal Cities · Mfd. and sold in Canada by Marine Industries, Ltd. Sorel, Quebec

Let the **HONEYWELL TIME-O-SWITCH**

CONTROL and the Cutout Switch

PROTECT Attic Fan installations



Above: The Honeywell S403A Time-O-Switch. Left: The Honeywell L477A Cutout Switch.

Attic Fan installations are best when the Honeywell Time-O-Switch controls and times the fan operation and the Honeywell Cutout Switch protects the home against the hazards of continued fan operation in case of fire.

The Time-O-Switch is simplicity in itself. After the length of fan operation has been determined for any period from one-half hour to eleven hours, a simple twist of the wrist starts the fan. It automatically stops when the time expires. Continuous operation is provided by a small lever on the side of the case and the fan may be instantly stopped by merely turning the dial. Actuated by the famous Honeywell Mercury Switch, theTime-O-Switch will produce long, safe and positive switching service for many years. Its handsome silver bronze case will grace any room.

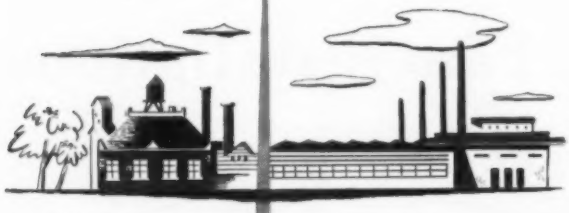
Use the Honeywell Time-O-Switch for any switching operation where time interval switching is involved, and use the Cutout Switch to insure protection. Minneapolis-Honeywell, Minneapolis 8, Minnesota. In Canada: Leaside,Toronto 17, Ontario.

MINNEAPOLIS **Honeywell**

CONTROL SYSTEMS

73 BRANCHES FROM COAST TO COAST WITH SUBSIDIARY COMPANIES IN: TORONTO • LONDON • STOCKHOLM • AMSTERDAM • BRUSSELS • ZURICH • MEXICO CITY

Thatcher



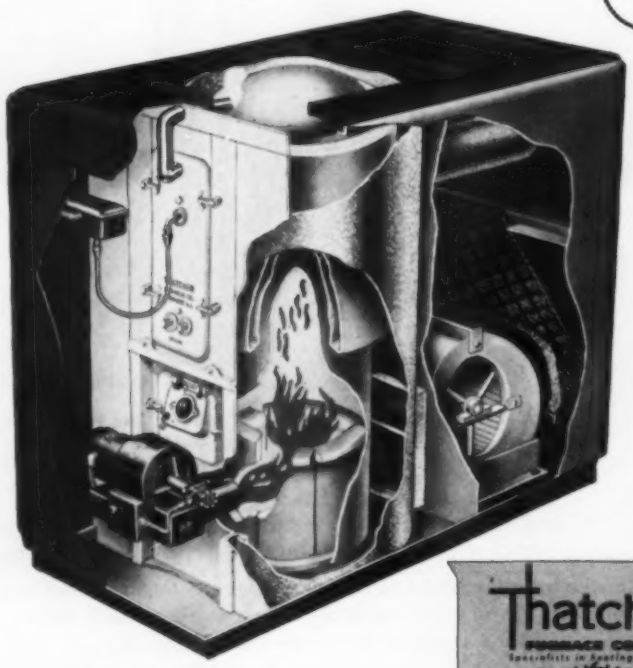
Pioneer in heating in 1850 . . .

Leader in modern home comfort today

For 99 years in the industry, Thatcher has always been a leader in discovering, developing, and *perfecting* what's new and better in home heating.

Typical of Thatcher's advanced design is the "V" series Comfortmaster – featured next month in Small Homes Guide. It's a completely automatic, oil-fired winter air conditioner. For the home owner, it's a lifetime investment in carefree comfort.

You'll find superb units for most *every type* of residential heating need in the one Thatcher line. So make a partner of Thatcher's long experience in building modern, trouble-free equipment. Recommend Thatcher—for a minimum of trouble, a maximum of efficiency.



7 reasons why it's EASIER TO SELL the Thatcher "V" series Comfortmaster

- Flange Mounted Oil Burner
- Modern Maroon and Grey Slip-Joint Cabinet
- Tailor-Made Combustion Chamber
- Automatic Vaporizing Humidifier
- Squirrel Cage Type Blower
- Welded Steel Gas Tight Radiator
- All Parts Easy To Reach

Thatcher Furnace Company
Specialists in Heating Since 1850

Specialists in Heating since 1850

GARWOOD, NEW JERSEY

Call on us at Booth 687
National Oil Heat Exposition, Boston — May 16-20

New 550 Oil-Fired Winter Air Conditioner

Comfort-master Oil-Fired Winter Air Conditioner

New Comfort-master Gas-Fired Winter Air Conditioner

A-204 Oil-Fired Winter Air Conditioner

Triple-Fire All-Purpose Boiler

481 Series All-Purpose Winter Air Conditioner

Oilmaster Automatic Oil-Fired Boiler

C-174H Coal-Fired Forced Air Furnace

Thermaster Gravity Furnace

QUALITY, TOO, IS MORE THAN SKIN-DEEP

Weirzin

ELECTROLYTIC ZINC-COATED SHEETS AND STRIP

Conspicuous in its flawless surface is Weirzin's electrolytically deposited coating of malleable zinc. And that's all you're likely to see of Weirzin, for—even after deep drawing—the zinc remains intact, forming an impervious protective coating, safe from underfilm corrosion.

But the quality of Weirzin is more than skin-deep. Beneath its zinc coating is Weirton's own cold-rolled steel, noted for its ductility, uniformity of gauge, and adaptability to drawing and forming operations.

Weirzin, in short, enables you to make better products—and with appreciable manufacturing economies.

WEIRTON STEEL CO.

WEIRTON, W. VA., *Sales Offices in Principal Cities*

Division of NATIONAL STEEL CORPORATION, *Executive Offices, Pittsburgh, Pa.*

● Sheet metal workers prefer Niagara Foot Shears because they combine strength, stiffness, lightness and portability. Unbreakable steel construction and absence of deflection mean accurate cutting. They provide smooth, well-balanced action, convenient operation and clear visibility of cutting line.

NIAGARA

FOOT SHEARS

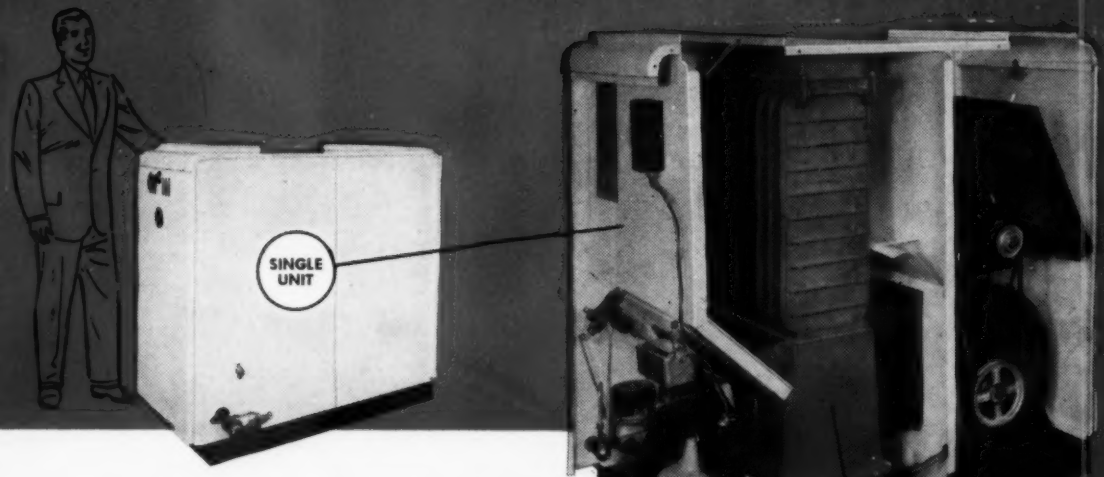
Write for Bulletin 80-E

NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.

DISTRICT OFFICES: DETROIT • CLEVELAND • NEW YORK

RS
11, N. Y.
W YORK

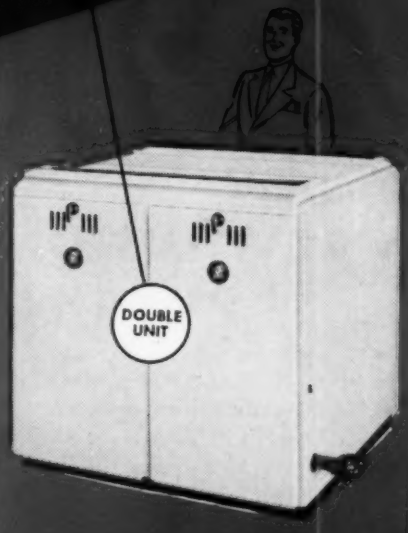
Job sizes—no problem with the NEW RICHMOND TWIN UNITS!



With the addition of three new "twin-units," Richmond's complete line of cast-iron Gas Winter Air Conditioners is able to fill most any warm air job. Large estates or compact cottages — medium size homes or commercial installations—there is a unit in the Richmond line to fill your need.

Check these capacities—they range from 66,000 to 280,000 BTU input. Models GHA 22-23-24 are paired up in a handsome "whiter-white" steel jacket with one set of controls—the GHA 1, 2, 3 and 4 are single units. All jackets are only 42" high—giving plenty of head and duct room. For jobs where floor space is at a premium, vertical units (same ratings as GHA 1, 2, 3 and 4) are available.

UNIT NO.	AGA RATINGS	
	INPUT BTU PER HR.	OUTPUT BTU PER HR.
GHA-1	66,000	52,800
GHA-2	90,000	72,000
GHA-3	115,000	92,000
GHA-4	140,000	112,000
GHA-22	180,000	144,000
GHA-23	230,000	184,000
GHA-24	280,000	224,000

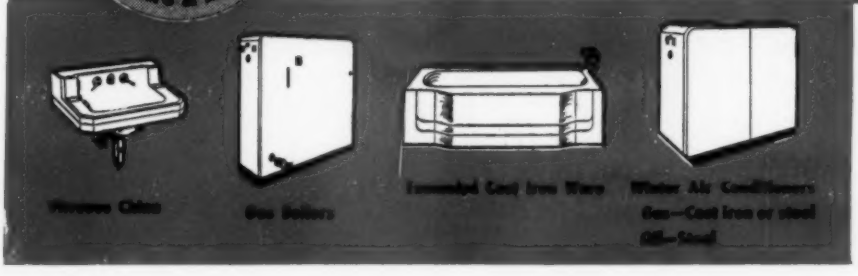


A unit designed with the TRADE in mind!

RICHMOND PLUMBING & HEATING

RICHMOND

RICHMOND RADIATOR CO.—AFFILIATE OF REYNOLDS METALS CO.



See your wholesaler or MAIL COUPON TODAY AA-4

Richmond Radiator Company
19 East 47th Street, New York 17, N. Y.

Please send me complete information and illustrated folder on the new twin unit Richmond Gas Winter Air Conditioners. No obligations, of course.

Name.....

Company.....

Address.....

"Sunny" Mor-Sun ANNOUNCES *with Pride the* INAUGURATION *of . . .*

A REVOLUTIONARY PLAN FOR FINANCING PURCHASES OF MOR-SUN FURNACES!

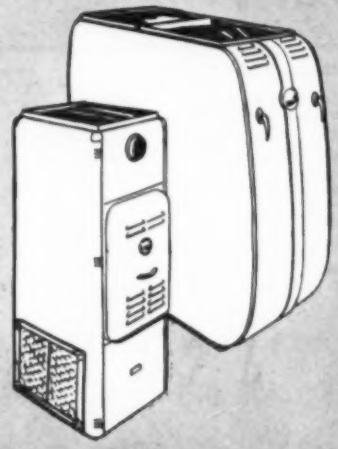
The MOR-SUN PLAN, in general, is the contribution of Morrison Steel Products, Inc., to the national economy — and, specifically, its purpose is to increase the sales and profits of its Merchandisers by enabling them to obtain necessary credit from their local bankers for quantity purchases . . . INCREASED SALES VOLUME NEEDS INCREASED WORKING CAPITAL.

Many manufacturers take it for granted that their Merchandisers are able to obtain quantity floor plan accommodation from banks — without recognizing some of the banks' problems in this connection. Little, if any protection is offered banks which enable them to justify this activity with their boards of directors and bank examiners. Morrison Steel Products, Inc., recognizing this heretofore unfilled need of protection, presents THE MOR-SUN PLAN.

The MOR-SUN PLAN is an installment finance program that enables *Morrison Merchandisers to obtain credit from their local bankers in a practical manner:*

WRITE ● PHONE
WIRE
for your
FREE COPY

. . . the details of the plan that now — for the first time in the furnace industry — guarantees your local bank loans to allow quantity MOR-SUN FURNACE purchases!



NOTE: *The* MOR-SUN PLAN *has been developed in cooperation with and approved by one of the nation's leading commercial banks.*

MORRISON
STEEL PRODUCTS, INC.
BUFFALO 7, NEW YORK

MOR-SUN PRESSED STEEL FURNACES

"The Sun Never Sets with MOR-SUN"

BRING IN A "SALES GUSHER"

BY TAPPING YOUR OIL HEATER CUSTOMER LISTS!

Extra Sales from "Check-Backs" for A-P AUTOMATIC OIL CONTROL ACCESSORIES

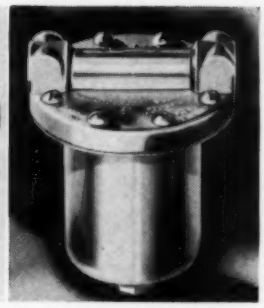
Like good oil stock, your customer lists can keep those dividends flowing in. And here's a simple merchandising formula to help you pump new life into "dead" files:

1. Check over all customer files dated back as far as 1939.
2. Give them to your office girl with instructions to check addresses against current city or phone directories.
3. Call a sales meeting. Give your salesmen the corrected lists and A-P Automatic Oil Control Accessories "sales ammunition."
4. Watch for results in new sales to old customers. Some of them will buy new heaters, too!

EVERY OLD CUSTOMER A NEW PROSPECT FOR ONE OR ALL THREE

A-P THERMOSTAT COMFORT KIT
Adds AUTOMATIC temperature control convenience to any heater made since 1939 and equipped with A-P Model 240-D, U or Y series Manual Controls.

A-P OILIFTER
Automatically lifts fuel oil from remote storage to *all* vaporizing oil burning appliances. Ends oil handling, spilling, waste.



A-P FUEL OIL TRAP-IT
Improves heating efficiency by trapping all dirt, sludge, gum and moisture in oil lines. Saves service expense.

"SALES AMMUNITION" FOR YOU...

- Consumer catalogs
- Folders for mailing
- Direct mail broadsides
- Newspaper ad mats
- Oil control tags
- "Album of Famous Vaporizing Oil-Burning Appliances"
- 15-minute slide-sound film available for dealer and salesman showing

AUTOMATIC PRODUCTS COMPANY

A-P DEPENDABLE *Oil Controls*

DESIGNED TO ELIMINATE SERVICING

Get Set for Your "Sales Gusher" Now. Mail the Coupon Today!

AUTOMATIC PRODUCTS COMPANY
2452 North Thirty-Second Street, Milwaukee 10, Wisconsin

Please send us immediately all sales ammunition featuring A-P Oil Control Accessories.

NAME.....

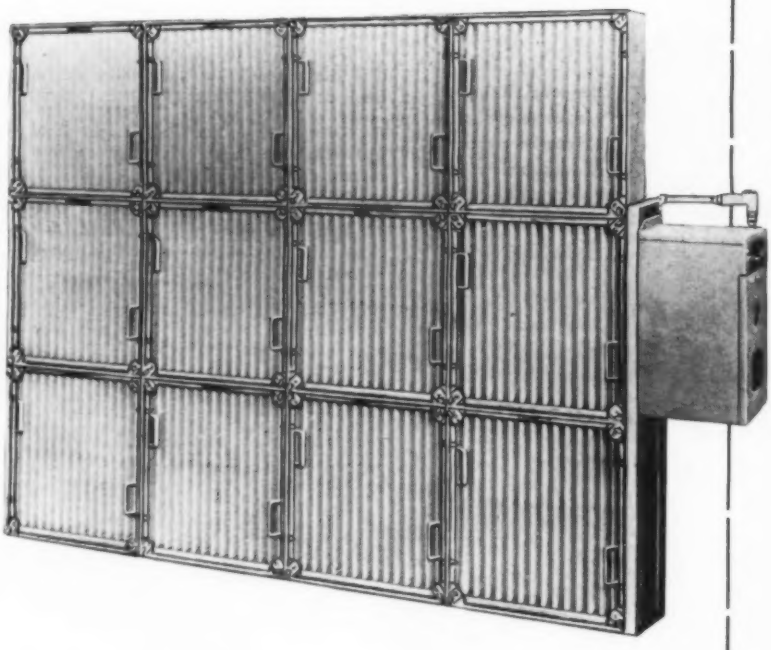
ADDRESS.....

CITY.....STATE.....

Signed by.....

Our jobber.....

A new filter for air cleaning jobs that demand something better



READ ALL ABOUT IT!

New dry-type electronic air filter delivers high cleaning efficiency without aid of ionizer. Complete information contained in Bulletin 257. Write for it!

New Electro-PL offers intermediate cleaning efficiency at lower first cost

THE new AAF Electro-PL filter is designed for those applications requiring better than normal air cleaning but do not justify the higher cost of super-clean air.

This dry-type electronic air filter averages 60% efficient by the Discoloration Method of Testing without the aid of an ionizing unit. Filtering media consists of Airmat* paper whose inherently high cleaning efficiency is almost doubled under electrostatic charge.

Elimination of ionizing unit assures a lower first cost, reduces power consumption and makes for simplified installation and maintenance. And with the Electro-PL on the job you enjoy positive protection at all times. If the electronic action should become inoperative, the air will continue to be filtered efficiently by the Airmat paper.

Intermediate efficiency with positive around-the-clock protection, they're yours for the first time in the Electro-PL at a pocketbook pleasing price. See your local AAF representative for complete details or write direct to:

AMERICAN AIR FILTER COMPANY, INC.
355 Central Avenue, Louisville 8, Ky.
In Canada: Darling Bros., Ltd., Montreal, P. Q.

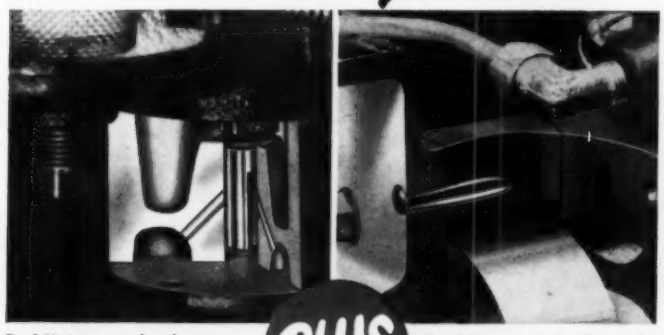
AAF

AIR FILTERS
AND ELECTRONIC PRECIPITATORS

**Airmat is the trade-mark (Reg. U. S. Pat. Off.) of the American Air Filter Company, Inc., for various air filters, dust collectors, and filtering media.*

These Features Add Up to

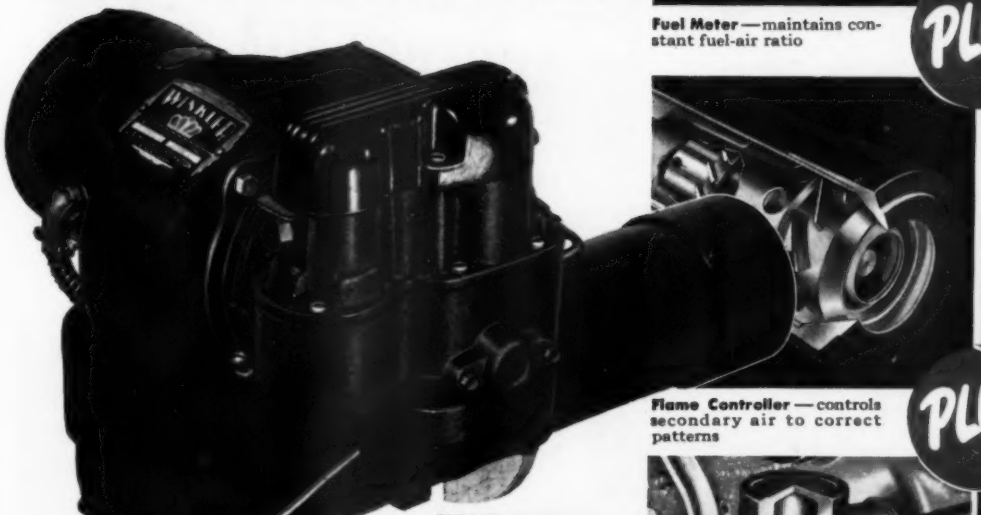
4-WAY SAVINGS

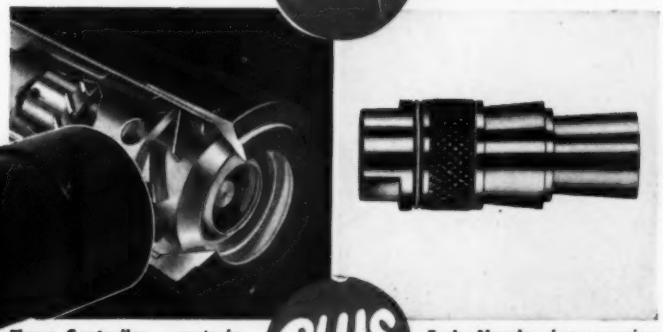


Fuel Meter—maintains constant fuel-air ratio

PLUS

Fuel Aerator—intimately premixes oil and air





Flame Controller—controls secondary air to correct patterns

PLUS

Turbo Nozzle—large opening is clog-proof

THE NEW WINKLER LP* OIL BURNER

*LOW PRESSURE

SEE OUR EXHIBIT
OIL HEAT EXPOSITION
May 16-20
BOOTH 577

Percolator—smooths out flow of oil-air mixture

PLUS

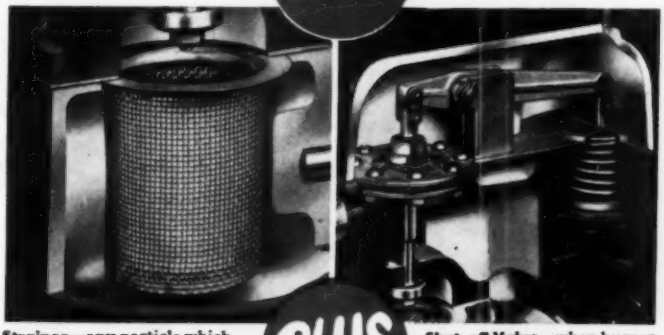
Cushioning Chamber—prevents oil delivery in spurts

YOU can scoop the market *now* with the Winkler LP* —*today's most talked about oil burner!* In your own showroom, with the sensational Winkler Demonstrating Unit, you can prove that here's a burner which really slashes heating costs. Owners report oil savings as great as 65%!

Saves oil—Cuts service expense!

The Winkler LP* achieves its economy in four ways. It can be sized to burn as little as ½ GPH—ending oversizing waste in the small heating plant. It saves service expense because of its utter simplicity and clog-proof nozzle. It ends the inefficient short runs usual with oversized burners . . . and, it is not critical of oil.

Don't delay in getting your share of Winkler LP* profits. Write for full information today!



Strainer—any particle which will pass its 1/20" coarse mesh will also pass through the nozzle

PLUS

Shut-off Valve—when burner stops, positive seal prevents oil flow to nozzle

WINKLER U. S. MACHINE CORPORATION
Dept. O-A4,
Lebanon, Indiana

Automatic Heating Equipment

Add extra profits to your service calls by selling and installing new DUST-STOP* Air Filters. Most forced-air furnaces need this service; owners will thank you for doing it. It's particularly good business now, for spring cleaning time is a logical time to replace dirt-clogged filters.

Your DUST-STOP distributor will be glad to help you increase your share of this highly profitable business. Folders, direct-mail pieces, blower labels, display materials —field-tested selling helps—are available for your use. Contact your distributor or jobber today. Owens-Corning Fiberglas Corporation, Dept. 930, Toledo 1, Ohio. In Canada, Fiberglas Canada Ltd., Toronto, Ontario.

***DUST-STOP is the trade-mark of Owens-Corning Fiberglas Corporation for impingement type air filters made with glass fibers. FIBERGLAS is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with glass fibers.**

MEMBER INDOOR COMFORT

DUST STOP

*T. M. REG. U. S. PAT. OFF.

AIR FILTERS
–a Fiberglas* product

CHILL-AIR Provides COOLING By EVAPORATION

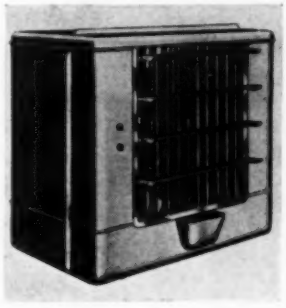
AT LEAST 19 OUT OF EVERY 20 COOLING JOBS TODAY USE EVAPORATIVE COOLING EQUIPMENT

THIS IS A BIG MARKET—GET IN ON IT NOW THROUGH CHILL-AIR

Highest in efficiency.
Lowest in first cost.
Lowest in operation cost.
Longest in years of service.
INSIST ON CHILL-AIR!

For 18 years the FIRST choice of progressive dealers everywhere—CHILL-AIR for LARGE volume sales and CHILL-AIR for extra big consistent profits.

USERS OF CHILL-AIR EQUIPMENT SHOWN HERE ARE ALL AGREED THAT CHILL-AIR GIVES 100% SATISFACTION! YOU CAN CHECK OUR USERS TO PROVE THIS.

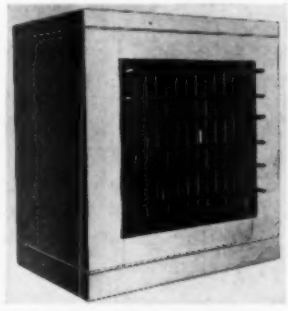


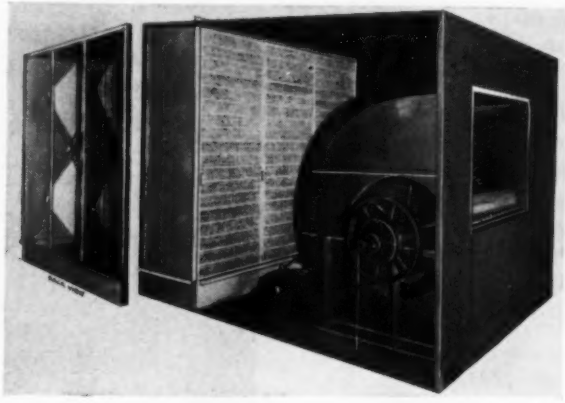
DeLuxe Chill-Air Window Cooler

Lowers temperatures 10° to 18°. Cools 1 to 3 rooms. Fully self-contained. No installation required. Sizes: 1700 and 2300 C.F.M.

Chill-Air Commercial Coolers

For homes, stores, offices, restaurants, etc. Inside or outside installations. Sizes: 3500, 4000, 5500, 8000, 13,500 C.F.M.





Chill-Air Heavy Mat Type Washers

Sturdy, heavy construction. Exclusive engineering features. 80% efficiency, trouble free. Sizes: 10,000, 15,000, 20,000, 30,000, 45,000 C.F.M.

Chill-Air Heavy Duty Blowers

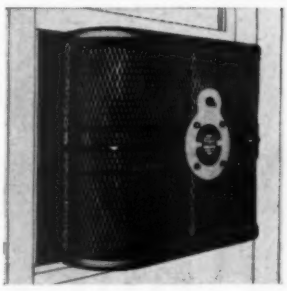
Precision built. Powerful yet quiet. Accurately balanced rotor. Lifetime of satisfactory service. Capacities: 10,000 to 60,000 C.F.M.

Chill-Air Window Fans

Fine detailed construction. Beautiful appearance. Large, long-life motors. Easy, quick installation.

Sizes:

2300 C.F.M 16 in.
3300 C.F.M. 20 in.
5500 C.F.M. 24 in.



Chill-Air Recirculating Pumps

A marvel for continuous, trouble-free performance. TOTALLY enclosed motor. Cast brass housing and impeller.

All sizes for window and commercial coolers.

TO DISTRIBUTORS
A Few Territories Still Open

A Cooling Unit for Every Need from the Smallest Room to the Largest Building

National Engineering & Manufacturing Co.

523 WANDOTTE STREET KANSAS CITY, MO.

TO DEALERS
Write for Literature and Prices
A Distributor Will Supply You

FOR LOW COST HOUSING...

Honeywell adds a line of baseboard grilles to its air diffusion registers

Now, Honeywell offers you a complete line of forced warm air registers and grilles, headed by the leader of them all—the Air Diffusion Register.

Newest items are the baseboard discharge and return grilles designed for the type of construction where strict economy is the first requirement. Rigidly built of single piece construction, the grilles have a 7/8" flange on all sides. No separate flanged frame is needed. And they offer the added advantage of sponge rubber seal-off for protection against unsightly streaking.

You'll profit in more than one way by standardizing on Honeywell registers and grilles for every forced air installation. Get all the facts. See for yourself. Write Minneapolis-Honeywell, Minneapolis 8, Minnesota. In Canada: Leaside, Toronto 17, Ontario.

D510A Honeywell Baseboard Discharge Grille with damper and seal off

D500A Honeywell Air Diffusion Register

D521A Honeywell Return Grille with damper

D520A Honeywell Baseboard Return Grille

MINNEAPOLIS Honeywell

CONTROL SYSTEMS

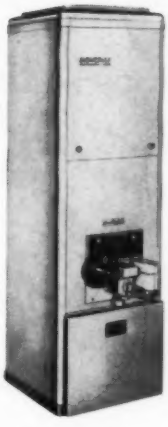
You get *ALL* the *FEATURES*... in MONCRIEFS new "YEARS AHEAD" Pressure Vaporizing *OIL FIRED UNITS*

They're a "CINCH" to Install

They're a "CINCH" to Service

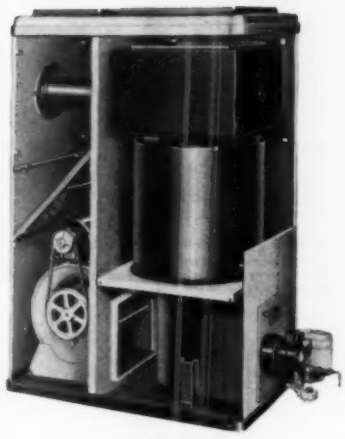
AND They're Underwriters approved to burn No. 3 OIL

76,000 Btu Output
No. BL-65 Air Conditioning Unit



75,100 Btu Output
No. VU-75 Utility Unit

60,600 Btu At Register
No. VW-61 Gravity Furnace



Interior View of Air Conditioning Unit

It's a matter of minutes to install or remove the complete Moncrief oil burner.

Yes, it's a "CINCH" they are your best bet in meeting the demand for moderately priced—high quality—good looking, oil fired heating units.

These attractive units with baked enamel finish and attractively rounded corners are factory assembled and ready for installation of oil burner. To install the factory adjusted pressure vaporizing burner in the combustion chamber is merely a matter of minutes. Burner installation is unusually simple through the use of a burner mounting plate which locates the burner in exact, correct position. You then tighten only 4 screws . . . connect the oil line and the burner is completely installed.

Removal of the complete burner unit for inspection or servicing is just as simple an operation as installing it.

These "Years Ahead" pressure vaporizing burners are Underwriters' Laboratories approved for burning No. 3 fuel oil as well as lighter domestic grades.

Your Moncrief jobber can supply complete information. Write for illustrated, descriptive literature.

THE HENRY FURNACE COMPANY

Medina, Ohio

HEATING AND AIR CONDITIONING UNITS — MONCRIEF — FURNACE PIPE AND FITTINGS

Hoot, Mon

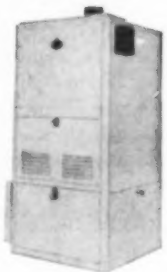
'TIS TIME YE HAD A SHARE OF

COROAIRE PROFITS

COROAIRE CONSOLE—A complete winter air conditioning system designed for small homes, commercial and replacement installations.

THE REVOLUTIONARY PATENTED COROAIRE CAST IRON VENTURI TUBE HEAT EXCHANGER—Heart of every Coroaire

5 times greater radiating surface
5 times longer flue travel
100% wiping action



A FACTORY ASSEMBLED AND PACKAGED WINTER AIR CONDITIONING FURNACE—complete, ready for installation.

Sell **COROAIRE**—Profit Leader—Economy Leader.

PATENTED EXCLUSIVE FEATURES—The exclusive Venturi tube.

SHIPPED ASSEMBLED COMPLETE—Less time to install—tested under fire at factory.

PROVEN RECORD—Thousands installed since the war, in large new-home projects, individual dwellings, apartments and commercial buildings.

ECONOMY AND EFFICIENCY—Heating bills reduced as much as 50%.

NATIONAL RECOGNITION—Endorsed by recognized heating authorities and builders.

PRICED RIGHT—Install top quality at no extra cost—generous profit margin for you.

Get your share of these profits. Write Now!
For complete franchise details address inquiries to:

THE COROAIRE HEATER CORPORATION
1422 Euclid Ave. • Cleveland 15, Ohio

FIRST in the Industry

Coroaire PATENTED The Scotch Heater

COROAIRE

The Hottest Line for '49

Proven in
Practical Use

It's ALUMINUM
It's Feather Light—
It's Stronger—Better Looking—
It's *CHAR-GALE—
And IT COSTS NO MORE!

Char-Gale aluminum fittings are made to give years of satisfaction to your customers. They are stronger, better looking, longer lasting. They are better for the men who do the job, too. Feather-light, they are easier and cheaper to handle and transport. And what a break their light weight is for the installer!

*Char-Gale Registers

Made of quality materials, carefully designed, these registers have a 12½ degree downward directional flow. Models for every type of installation are available.

PREFABRICATED DUCTS AND FITTINGS FOR WARM AIR HEATING

CHAR-GALE

MINNEAPOLIS CHAR-GALE MFG. CO. OMAHA

* "NO HEATING PLANT IS BETTER THAN ITS INSTALLATION — NO INSTALLATION CAN BE BETTER THAN ONE OF CHAR-GALE FITTINGS"

How to beat the rust problem —at LOW COST

There is more than one answer to the problem of corrosion in ductwork. But considering cost of materials and their workability, there is a practical solution in the use of a rust-defying, copper-bearing galvanized sheet steel like Beth-Cu-Loy.

Beth-Cu-Loy Sheets offer a double defense against rust. Beth-Cu-Loy is protected on the surface by Prime Western zinc applied in a tight, bright coating. Under the coating is the Beth-Cu-Loy base containing 0.20 to 0.30 percent copper, with 2 to 2½ times the rust-resistance of ordinary steel. Result: if rust eventually penetrates the zinc coating, it comes up against a barrier of copper-bearing steel.

Beth-Cu-Loy sheets have the easy-forming qualities that sheet-metal men like, yet they have adequate stiffness to permit the use of long sections in ductwork. They are simple to cut, to seam and to solder. With all of these advantages, Beth-Cu-Loy Galvanized Sheets cost very little more than ordinary zinc-coated steel sheets.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem Products are sold by Bethlehem Pacific Coast Steel Corporation

Beth-Cu-Loy Galvanized Sheets

BETHLEHEM STEEL

IT'S NEW! IT'S NEWS!

The evolutionary new KO-Z-AIRE® CONDITIONING UNIT

The latest, greatest development in heating history!

Here it is! The most amazing conditioning unit you've ever seen, ever heard of! A marvel of compact efficiency—an entirely new concept in design. Unusually simple to install (since it's shipped as a self-contained package). Sure fire for fast sales, quick profits!

So sensational . . . We want you to name it

$1000.00 CASH Just for its name!

A big contest right now to find the best descriptive name for this new conditioning unit. Watch for announcement of winner!

Completely different in design! Amazing in action!

ONLY 36½ INCHES HIGH— YET GIVES 83,200 Btu

You'll be surprised at how little space this new KO·Z·AIRE occupies. It's only 23″ wide, 39″ deep. Shipping weight is approximately 250 lbs. Automatically fired by gas, has oversize filters.

MAIL COUPON NOW FOR FULL FACTS!

JONES & BROWN, INC.
439 SIXTH AVENUE · PITTSBURGH 19, PA.

Jones & Brown, Inc.
439 Sixth Ave., Pittsburgh 19, Pa.

Yes, I want complete information on the evolutionary new KO-Z-AIRE.

Name .....

Address .....

City ..... State .....

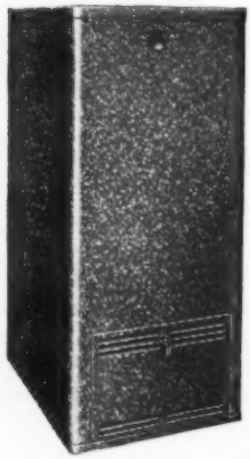
A

You need the line that really Sells in a "Buyer's Market"

Superfex GAS or OIL furnaces

Superfex GIVES YOU

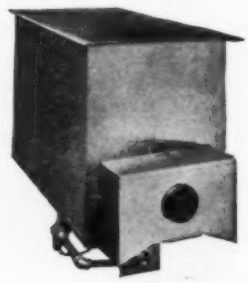
- ✓ Choice of basement units, highboys or floor furnaces.
- ✓ Choice of complete units or conversion burners.
- ✓ Choice of popular sizes and types.
- ✓ Choice of gas or oil burning models.
- ✓ Choice of vaporizing or gun-type oil burners.
- ✓ Choice of natural, artificial or LP gas burners.
- ✓ Choice of "Homogen-Air" three-stage fire with synchronized two-speed blower; two-stage system or gravity furnaces.
- ✓ Highest quality construction; Stainless steel burner parts; High efficiency heat exchangers; Double-wall casings of heavy gauge steel; Sealed-to-steel baked enamel finish.
- ✓ Heating engineering service backed by the finest development laboratory in the industry.



75,000 B.t.u. input. Gas
Also made for 100,000 B.t.u.

100,000 B.t.u. input. Gas
Also made for 150,000 B.t.u.

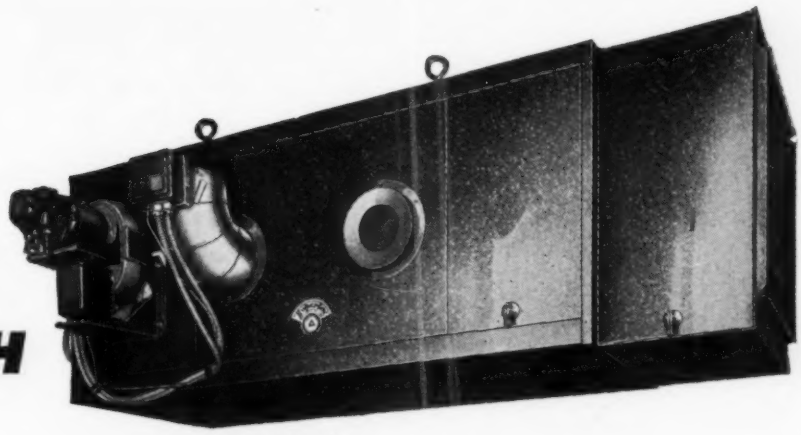
75,000 B.t.u. input. Gas



Floor Furnace. Gas
50,000 B.t.u. input
Also made for 35,000 and 65,000 B.t.u.

EVERY SEASON IS YOUR BUSY SEASON WITH SUPERFEX

AND HERE'S THE NEW ADDED PUNCH



Suspended unit.
200,000 B.t.u. at bonnet (Gun-Type)

Superfex Oil-Fired Overhead Units

The fastest selling merchandise to hit the field in years. New opportunities for all-year installations in industrial plants, garages, service stations, hangars, commercial quonsets, stores, shops, school, halls and the like. 200,000 B.t.u. at bonnet. Comes assembled, ready to hang.

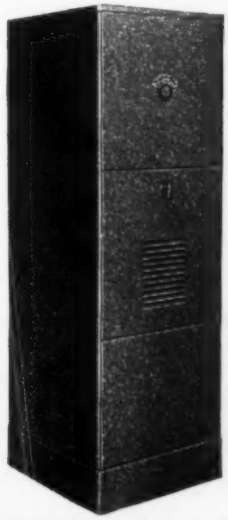
105,000 B.t.u. at bonnet. Oil (Gun-Type)
Also made for 150,000 B.t.u.

Superfex Gas-Fired Floor Furnaces

Simplest and most efficient made. Designed for quick-profit installations in many popular types of small homes. Three sizes – 35,000, 50,000 and 65,000 B.t.u. input.

Superfex Conversion Oil Burners

The latest and best gun-type burner. An outstanding advantage is its ability to burn catalytic oils without the troubles that beset ordinary burners. Three sizes with capacities of ¾ to 3 g.p.h.; 3 to 8 g.p.h. and 8 to 13 g.p.h.



70,000 B.t.u. at bonnet. Oil

95,000 B.t.u. at bonnet. Oil
Also made for 130,000 B.t.u.

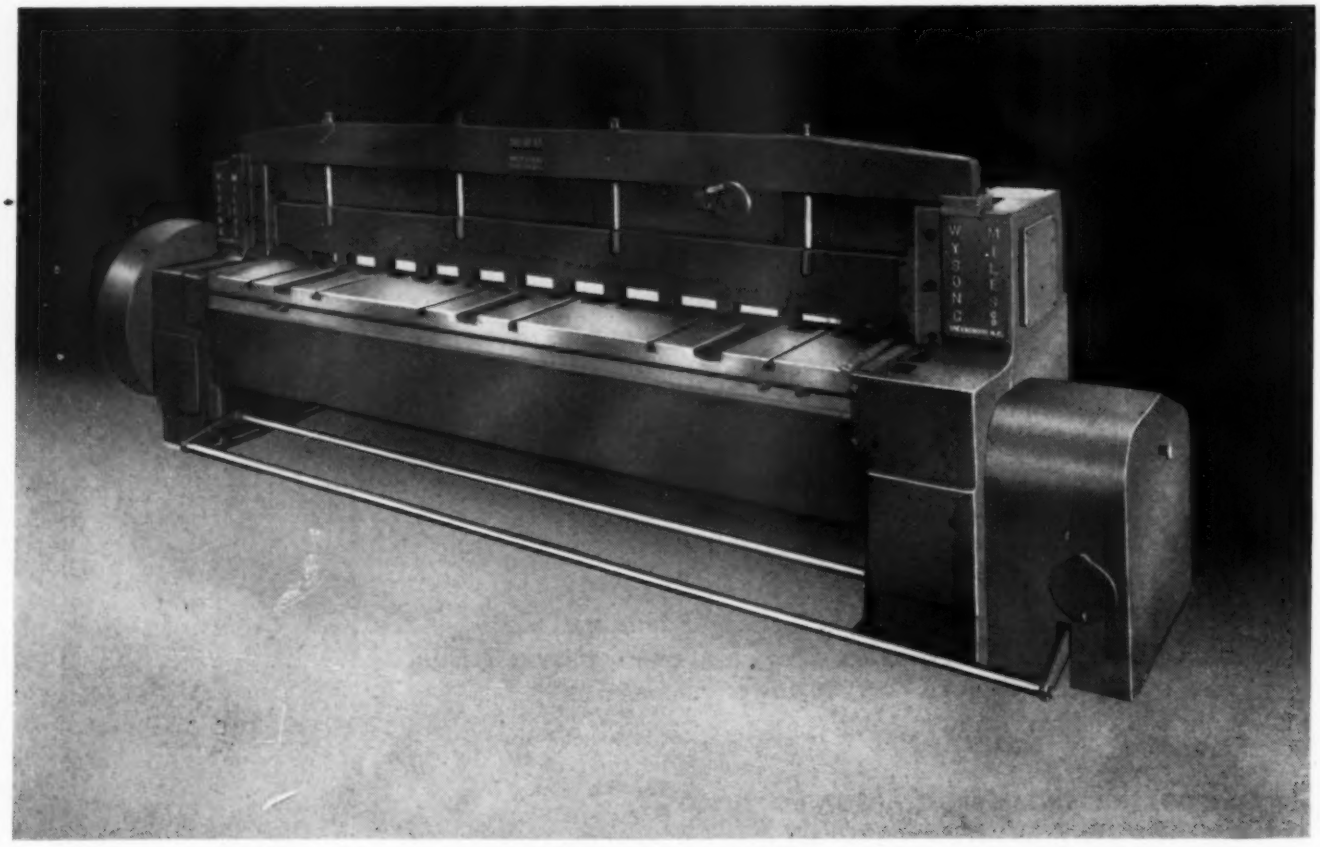
75,000 B.t.u. at bonnet. Oil

62,000 B.t.u. at bonnet. Oil

Superfex GAS OR OIL FURNACES

Made By PERFECTION STOVE COMPANY
7095-A Platt Avenue • Cleveland 4, Ohio

MAKERS OF COOKING AND HEATING DEVICES FOR 60 YEARS



Capacity 10 Foot, 10 Gauge, Mild Steel

9 reasons why everyone in the plant likes THE WYSONG & MILES No. 10-10 SHEAR

Sound engineering has produced an accurate, high production shear for less money. The No. 10-10 takes the toughest shearing jobs in stride and is shipped completely equipped, ready for continuous capacity operation. Rugged construction and precision features insure accurate cutting plus economical operation. The following features are standard.

1. Massive construction . . . Semi-steel castings with a high steel content are made in the modern Wysong and Miles Foundry to carry greater stress than required for continuous capacity loads. By being underdriven, weight is low and the shear has rigid stability.

2. For accurate shearing . . . The bed is squared with the end frames in all directions. Holddown and knife-bar travel is true because ways are hand-scraped for perfect bearing and are squared with the bed. Solid, standard alloy steel blades with 4 cutting edges, backed by massive knife-bar, cut straight, cleanly and accurately.

3. Front-operated back gauge . . . It accurately adjusts to .0078 (1/128th) of an inch by turning the handwheel conveniently located on the front of the shear. This gauge saves many steps and increases production.

4. Positive compensating holddown . . . Individual spring actuated plungers in each foot firmly clamp sheets of varying thicknesses and small strips without adjustment.

5. 9-Jaw Clutch . . . Built of hardened, forged alloy steel for long life, the jaws mesh smoothly, engage instantaneously, and the load is distributed equally over all 9 jaws. A twist of the wrist sets the clutch for single stroke or continuous shearing. Wherever this Wysong and Miles designed clutch is in use, it continues to give trouble-free service.

6. Self-lubricating eccentrics . . . For thorough lubrication and cool operation, on each revolution, eccentrics are bathed in a reservoir of oil contained within each end frame.

7. Cam-operated brake . . . Since brake engages only to hold the knife-bar in the top position, there is no drag on the balance of the stroke. Powerful counterbalancing springs aid in returning the knife-bar smoothly to the top position.

8. Testing and guarantee . . . Before leaving the factory, each shear is thoroughly tested with an automatic trip for 24 hours of operation. Each shear is shipped in perfect operating condition and each shear is backed by a year's guarantee.

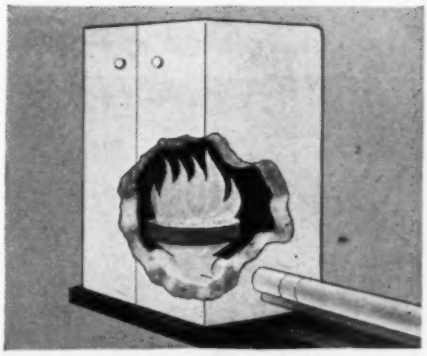
9. Economical . . . You'll be pleasantly surprised at the low cost of the No. 10-10 shear. 100% jig and fixture construction, plus simplicity of design means easy maintenance, making the No. 10-10 economical in operation . . . truly a great shear value.

Write for Catalog No. 22 giving full information and specifications on the Wysong and Miles line of Sheet Metal Machiney . . . Squaring Shears, Power, Air and Foot operated; Slip Roll Formers and Rotary Combination Sheet Metal Machine.

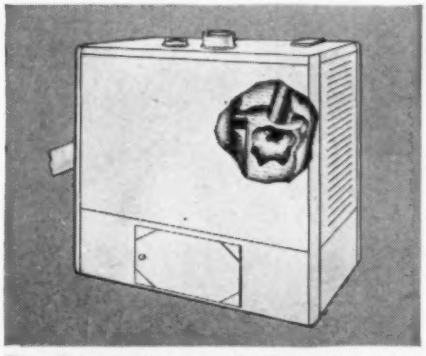
WYSONG and MILES Co

633 FULTON STREET
GREENSBORO, N. C.

Will fuel take TOO BIG A BITE out of your customers' pay checks?



Automatic Anthracite Stokers—Installed in an existing boiler or furnace and in new houses, automatic hard coal stokers deliver *plenty* of heat quickly . . . save up to 52% on fuel bills . . . eliminate fuel worries.



The Revolutionary Anthratube—The Anthratube saves on fuel bills . . . its proved efficiency is over 80%. This scientifically engineered boiler-burner unit, with "Whirling Heat" and other revolutionary features, produces quicker response and superior performance than units using other types of fuel.

Automatic Anthracite Heat offers savings up to 52% on annual fuel bills

• Here's how you can be a real friend to your customers . . . and build good will plus future business for yourself.

Just ask a few customers if they would rather burn money or Anthracite . . . it's as simple as that.

Then tell your customers how they can offset today's high living costs with completely automatic Anthracite equipment.

You'll find that most people will welcome the chance to save $100 to $200 every year . . . particularly when they learn they can have all the comfort and convenience of completely automatic heat. Moreover you can assure them they will have *plenty* of heat . . . because there's plenty of hard coal now, and for years to come.

• • •

Get complete information about modern coal stokers, and data on the revolutionary new Anthratube, by writing to Anthracite Institute *now*.

ANTHRACITE INSTITUTE

101 Park Avenue • New York 17, New York

ANTHRACITE INSTITUTE
101 Park Avenue, Dept. 4R
New York 17, New York

Please send me more information on anthracite and anthracite equipment.

Name_____

Address_____

City_____ Zone____ State_____

PLEASE PRINT

BETTER, FASTER SHEET METAL WORK with WISS METAL-MASTER SNIPS

"THEY CUT EASIER AND FASTER." That's what metal workers say about the compound leverage action of these snips when applied to tough sheet metal. But that's only one reason why Metal-Master snips are the choice of professionals:

No other snips can equal Metal-Masters when it comes to cutting inside holes and for the most intricate patterns and curves. The set of three shown below enables the worker to tackle any job with confidence—and finish it quickly and efficiently.

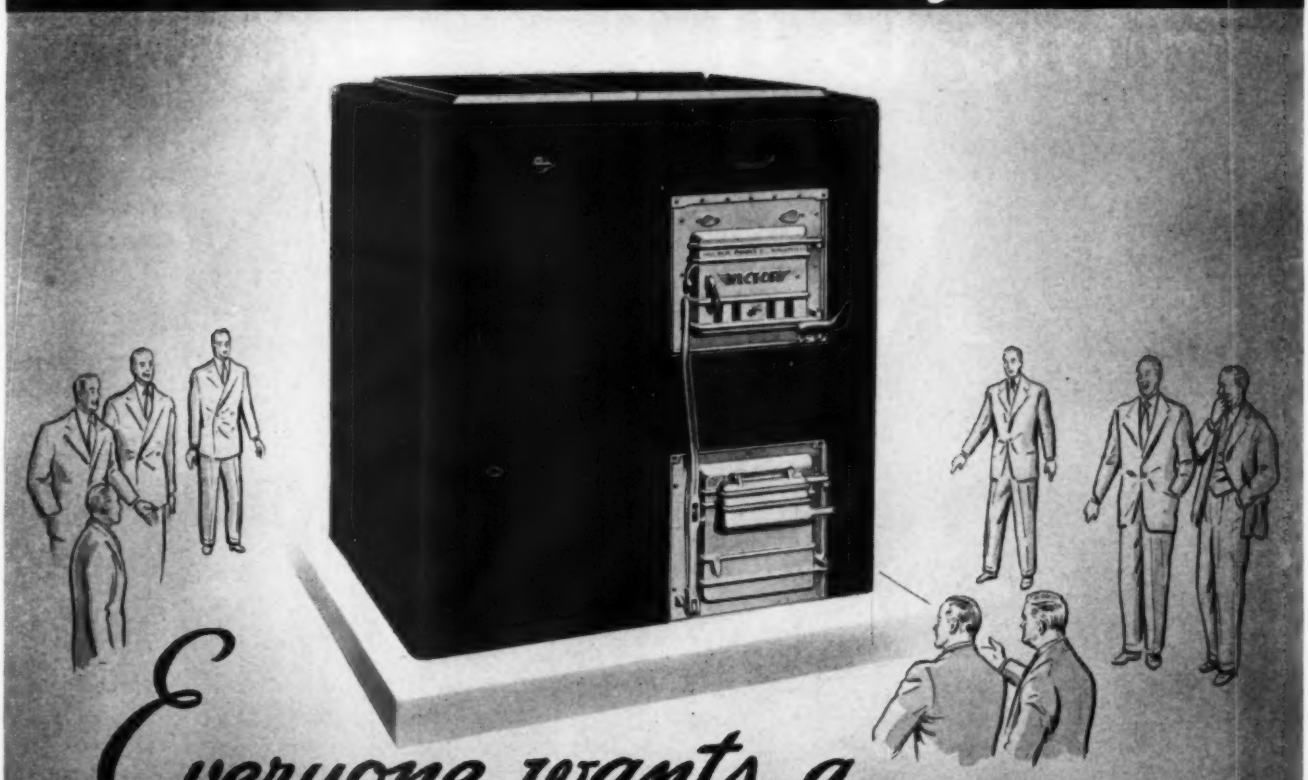
Metal-Masters can be carried in the pocket. They are so versatile that there is no need to carry an assortment of heavy, bulkier tools from job to job.

Quality for over a Century

J. WISS & SONS CO., NEWARK 7, NEW JERSEY

Examples of intricate designs which can be cut with Metal-Master Snips.

"It's the VICTOR LINE for '49!"



Everyone wants a VICTOR FRANCHISE – because

- VICTOR has more exclusive features of genuine merit.
- It's the only furnace with patented Heat Radiating FINS.
- It guarantees a generous, exclusive, dealer territory.
- VICTOR furnaces are sold under NO OTHER NAME.
- Free engineering service to ALL dealers.
- The VICTOR line is complete in all sizes for coal, gas and oil.
- Line includes blowers, stokers, oil and gas burners, accessories.
- You sell *Easier* . . . sell *Faster* . . . sell *MORE!*
- . . . and there is "no substitute for quality . . . plus experience!"

Write us
INVESTIGATE THE VICTOR LINE FOR '49!

VICTOR *HAS BEEN FAMOUS FOR QUALITY FOR OVER 59 YEARS*

COAL · GAS · OIL FURNACES · OIL BURNERS · STOKERS · BLOWERS · ACCESSORIES

HALL-NEAL FURNACE CO.

VICTOR *Quality Furnaces Since 1890*

1332 N. CAPITOL AVENUE · INDIANAPOLIS 7, INDIANA

QC (Quick Coupling) METALBESTOS is:

FOOLPROOF—New patented coupler, precision formed for perfect fitting, makes each section a complete unit. No more cutting, crimping or hole punching.

FASTER TO INSTALL—With unique adjustable section (an exclusive design) and patented die-formed coupler, new, quick coupling Metalbestos can be installed faster, with greater accuracy, than **any** other gas vent and flue pipe.

EASIER TO HANDLE—Lightweight (all aluminum), rugged, double wall construction makes Metalbestos easier to handle, simpler to erect. Will not bend, chip, crack, or break. All joints are gas tight, leak proof.

UL APPROVED—Quick coupling Metalbestos meets, without qualification, the rigid specifications of Underwriters' Laboratories, Inc.

THE NEW QC (QUICK COUPLING) METALBESTOS Gas Vent and Flue Pipe

is the fastest-coupling best-performing gas vent and flue pipe you can buy. QC Metalbestos is a **REVOLUTIONARY DEVELOPMENT** in gas venting. Specifically designed for that purpose, Metalbestos' famous **pipe-within-a-pipe** construction provides a better draft, quicker—with minimum heat loss, maximum insulation.

Better jobbers everywhere already are stocking this new QC (Quick Coupling) Metalbestos Gas Vent and Flue Pipe.

See your jobber or write today for free bulletin giving complete information.

WILLIAMS-WALLACE CO.
160 HOOPER STREET · SAN FRANCISCO 7 · CALIF.

AMERICAN-Standard

First in heating . . . first in plumbing

Gas Fired *Seneca* Winter Air Conditioner

DESIGNED TO SELL...

ENGINEERED TO STAY SOLD

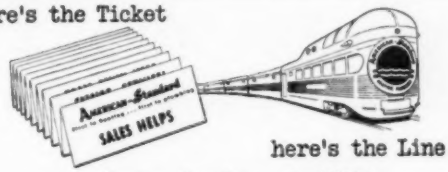
WHEN you put the Seneca on your sales floor, you're featuring one of the neatest, most attractive gas fired winter air conditioners on the market. Its rich, Placid Two-Tone Blue jacket catches the eyes of all who enter your store. Then, when you describe its many features and tell prospective customers about its efficiency and economy, you're on the way to another sale. And every Seneca you sell means another highly pleased owner—one whose enthusiasm will send other customers to you!

While designed especially for small to medium sized homes, the Seneca has a number of features usually found only in costlier units. Its heating element is constructed of corrosion-resisting copper bearing steel, correctly proportioned and joined together permanently by electric welding. Baffles in large radiator conduct gases through multiple passes, heating radiator completely before gases enter flue. Conveniently located radiator clean-out openings permit easy cleaning of the heating surfaces if necessary. The Seneca burns manufactured, natural, mixed, or liquefied petroleum gas efficiently and economically.

For complete information about the gas fired Seneca and other winter air conditioners and furnaces by American-Standard, contact your Wholesale Distributor. **American Radiator & Standard Sanitary Corporation,** P. O. Box 1226, Pittsburgh 30, Pa.

Look for this AMERICAN-Standard HEATING PLUMBING *Mark of Merit*

Here's the Ticket



here's the Line

-to better business in '49!

When you sell American-Standard products you get all the selling aids you need to bring in more business. Ask your Wholesale Distributor for details of this powerful new advertising and merchandising program.

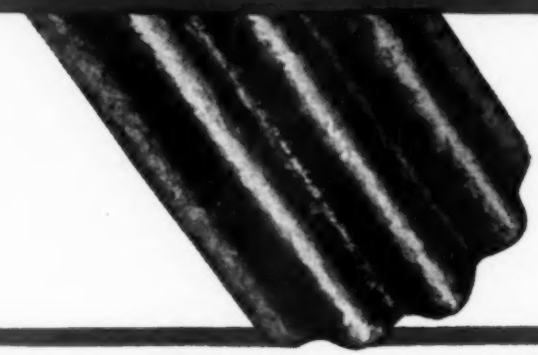
Serving home and industry

AMERICAN STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILER • ROSS HEATER • TONAWANDA IRON

You can stand squarely behind every job when it's done with . . .

Wheeling
CORRUGATING COMPANY
Reg. U.S. Pat. Off.

COP-R-LOY SHEETS · EAVES TROUGH
GALVANIZED SHEETS · FURNACE PIPE
GUTTER · ROOFING ACCESSORIES



Wheeling's Modern Equipment Means Uniform Quality

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NORGE HEAT

Gas-Fired

WINTER AIR CONDITIONER

● Here at last is a highly styled finely engineered furnace designed to meet *your* specifications. Lowest installed cost . . . no service worries . . . nationally recognized name. Think of it! Fits between studding practically flush to the wall . . . only 12¼ inches deep, 32 inches wide, and 88 inches high . . . yet has 62,500 B.T.U. input capacity. Great flexibility . . . can be safely installed anywhere with little or no duct work . . . in wall, closet, utility room or basement. Complete factory tested package . . . 12 gauge heat exchanger . . . built-in plenum chamber and draft diverter . . . 100% safety shut-off controls and automatic thermostat. Provides filtered summer ventilation. Fully approved by A.G.A. for natural, manufactured and L.P. gases. Nothing like it on the market!

Norge Heat has a complete line of great products!

NORGE HEAT

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Gas and Oil-Burning Water Heaters

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SEND TODAY for FULL DETAILS

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672 E. Woodbridge, Detroit 26 AA-2

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They'll All Be There!

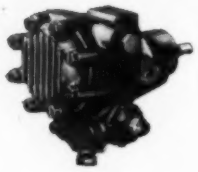
See these Sundstrand Fuel Units demonstrated at the National Oil Heat Exposition...May 16-20 Boston, Massachusetts

We've told you about the efficient performance of Sundstrand Fuel Units. Now, you can see them demonstrated under conditions similar to actual operation. The demonstration reveals capacities, mechanical efficiency, pulsation, cut-off, electrical consumption and the quietness of Sundstrand Fuel Units.

Don't miss the show, and don't miss this demonstration in Booth No. 457.

FREE ADDITIONAL DATA—This booklet will give you more complete details on the Sundstrand line. Use it for a handy reference on those unusual jobs that come up now and then. Write for your copy today. Ask for Bulletin No. A-40. NOTE: Sundstrand Fuel Units are being manufactured in Canada by John Inglis, Ltd., 14 Strachen Avenue, Toronto, Canada.

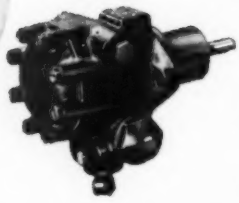
Fuel Units for All Types of Burners



S1-B — Most popular unit for domestic oil burners. Entire capacity of pumping members is 21 GPH. Maximum nozzle capacity of either 4½ or 6 GPH depending upon strainer rating.

S1-H — Has maximum nozzle and strainer capacity of 13 GPH. Entire capacity of pumping member is 27 GPH.

S1-J—Used on oil burners with main line filtering means of capacity equal to or greater than maximum capacity of burner. Maximum nozzle capacity is 20 GPH. Entire capacity of pumping members is 35 GPH.



S-2—Standard two-stage pump with strainer. Has maximum nozzle capacity of 6 GPH. Entire capacity of pumping members is 18 GPH.

Model R—Two Stage—These units are self-purging and recommended for two line installations where unusually long suction lines and high lifts are required. Available in either 6 or 10 GPH nozzle and strainer capacities. Entire capacity of pumping members is 18 and 21 GPH respectively.

L1 — For small oil burners and water heaters. Has nozzle capacity of 2 GPH, has 25 watt power consumption, and when operated at 1725 RPM provides pumping capacity of 6 GPH. Recommended for gravity feed installations only.

1-OB Series—Pumps without strainer and regulating valve. Made in 3 sizes of 21, 27 and 35 GPH.

SOLENOID OPERATED UNITS FOR FAST CUT-OFF

Available for any Sundstrand Model S1 Fuel Unit when factory assembled. It provides instantaneous cut-off on high resistance type furnaces and eliminates an unbalanced air-oil condition upon shutdown. Prevents "flutter" and "puff-back" in combustion area and produces absolute clean burning.

SUNDSTRAND HYDRAULIC DIVISION

2561 ELEVENTH STREET • ROCKFORD, ILLINOIS

FUEL UNITS • HYDRAULIC PUMPS • TRANSMISSIONS • FLUID MOTORS • VALVES and CONTROLS

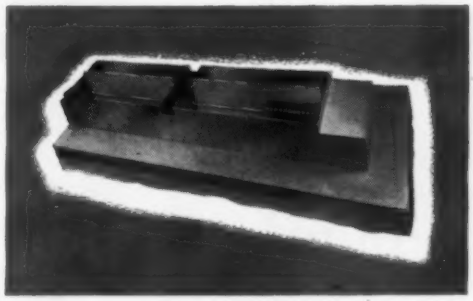
A NATIONALLY ADVERTISED Winter Air Conditioner...

That Helps You Sell UP

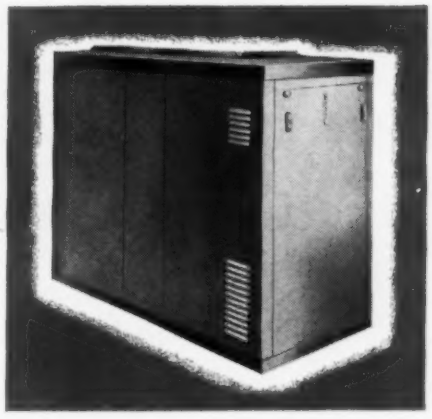
KAUSTINE offers you a complete line of Oil Fired Winter Air Conditioners for the home... topped by a nationally advertised De Luxe Model.

Here, in these 5 models, you will find units for every home and every pocketbook, with ratings from 60,000 to 270,000 B.T.U.

The De Luxe Units, as advertised in Better Homes and Gardens, include these De Luxe features—Airflo-Meter, factory wired controls on front panel, service door electric switch, extended limit control—in addition to the features of the basic model . . . giving you an opportunity for extra profit while providing your customers with greater wintertime heating comfort.



KAUSTINE AIRFLO-METER—the *MAJOR* control of DeLuxe equipment—automatically modulates the flow of air to eliminate the drafty sensation that causes what heating engineers know as a "cold seventy." The Airflometers are placed immediately on top of the furnace casing. They are connected to the return (cold) intake, to the warm air outlets, and to the ducts of the heating system.



BASIC MODELS, without De Luxe features, are for installation where price is a major factor. 4 sizes—from 80,000 to 270,000 B.T.U. Pressure type blower forces filtered, pre-heated air over large streamlined combustion chamber. Radiation shields keep air in constant contact with heating surfaces.

High Boy (65,000 B.T.U.) and Low Boy (60,000 to 80,000 B.T.U.) factory assembled units are also available.

Write for complete information to **KAUSTINE COMPANY, INC.**
Perry, N. Y., Dept. DB

KAUSTINE QUALITY SERVICE SATISFACTION

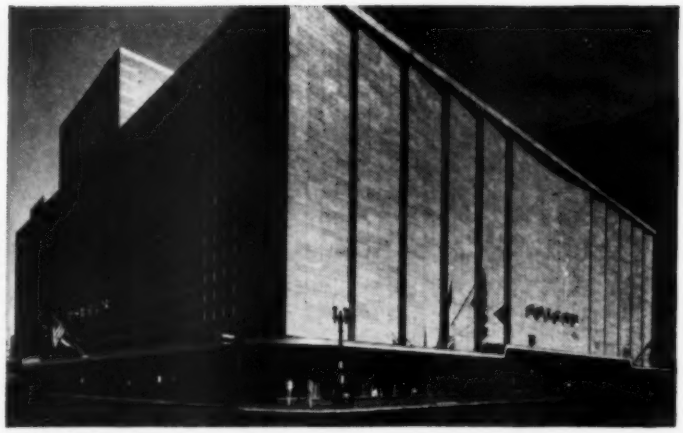
Kaustine

COMPANY, INC.
PERRY, NEW YORK

BACKED BY NATIONAL ADVERTISING . . . BY MORE THAN 34 YEARS SERVICE TO THE AMERICAN HOME OWNER

MODULATED WARM AIR FURNACES . . . SEPTIC TANKS . . . SEPTIC SEWAGE DISPOSAL EQUIPMENT . . . METAL TILE CONNECTORS . . . OIL AND GASOLINE STORAGE TANKS . . . HYDRO-PNEUMATIC AND WATER STORAGE TANKS . . . PRESSURE VESSELS . . . TRUCK TANKS . . . CUSTOM BUILT FABRICATED EQUIPMENT . . . TRANSFER PUMPS

The Mirror Building, Los Angeles



Foley's, Houston

Oregonian Building, Portland

John Hancock Building, Boston

In America's Finest Postwar Buildings . . .

The ductwork is Aluminum!

In these modern buildings, and in hundreds of other big and little installations—Kaiser Aluminum has been chosen for heating and ventilating ducts.

Here's how you'll gain when *you* choose it, too:

First, you'll find Kaiser Aluminum surprisingly inexpensive.

Then you'll discover its lightness, its workability—*and its toughness.* It takes a Pittsburgh Lock Seam perfectly, and there's no coating to spall.

Next, you'll quickly learn about the additional economies of Kaiser Aluminum. There's less wear on shop equipment, less scrap loss, less worker fatigue. You can skip many steps in handling, storing and trucking assembled sections—because you can set up shop right on the job.

Finally, ducts made of Kaiser Aluminum have lasting beauty—will never rust, never need painting. What's more, they have greater thermal efficiency!

On your very next job, be sure you use Kaiser Aluminum!

Permanente Metals

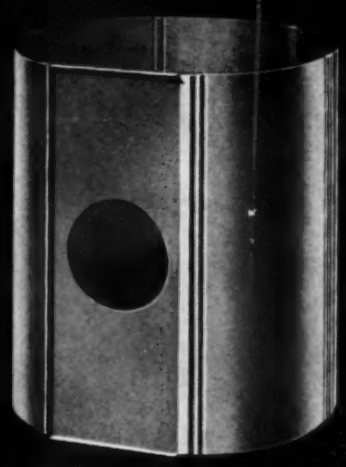
PRODUCERS OF

Kaiser Aluminum

SOLD BY PERMANENTE PRODUCTS COMPANY, KAISER BUILDING, OAKLAND 12, CALIFORNIA . . . WITH OFFICES IN:
Atlanta • Chicago • Cincinnati • Cleveland • Dallas • Detroit • Houston • Indianapolis • Kansas City • Los Angeles • Milwaukee
Minneapolis • New York • Oakland • Philadelphia • Portland, Ore. • Salt Lake City • Seattle • Spokane • St. Louis • Wichita
WAREHOUSE DISTRIBUTORS IN PRINCIPAL CITIES

PANELOX* leads again!

Now—Square and Rectangular Combustion Chambers in Heat-resisting Stainless Steel



ROUND. New design! New flat port panel for easier sealing of burner gun: reinforced with top and bottom flange. Seams strengthened to prevent warping.

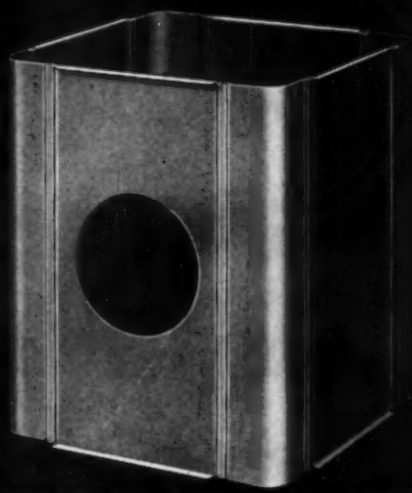
● It's news—and it's hot! Famous Panelox Stainless Steel Combustion Chambers are now available for square and rectangular installations!

Now you can fit Panelox chambers to any size or shape domestic firebox. Now you can cover the entire conversion and replacement markets. Now you can offer all your customers the advantages of Panelox superiority.

Rounded corner panels eliminate air pockets, reduce flame roar and turbulence. Reinforcing flanges on flat panels prevent distortion and warping, assure maintenance of original shape. Panels made in several widths for easy fitting to a wide range of chamber dimensions.

Get *all* the facts *now*. Climb on the Panelox bandwagon—and be set for big sales in the months ahead. Write, wire or phone for full details.

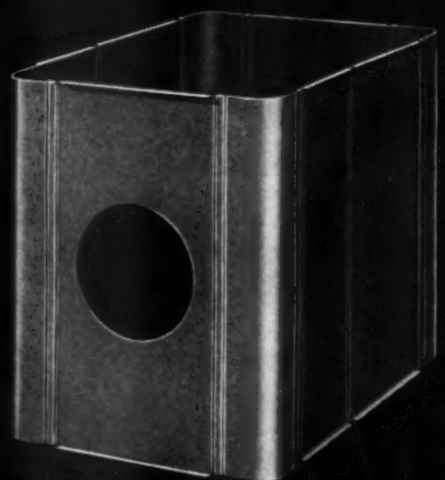
STEFCO STEEL COMPANY
Heating Equipment Div., Michigan City, Ind



SQUARE. Reinforcing flange on flat panels. Rounded corner panels permit perfect flame pattern.

Easy to install—no backfill, no tools, no cementing, no need to remove old chamber.

Four thicknesses at seams—provides extra strength, rigidity.



RECTANGULAR. Provides more combustion area in narrow fireboxes. Easy to fit any size or shape firebox.

- Finest heat-resisting stainless steel
- Interlocking panels slide together without tools
- No backfill or cement required
- Light weight, easy to handle
- No breakage in shipment
- Installed in minutes, heats up in seconds, stands up for years
- Saves fuel—reduces noise—provides more uniform heat

PANELOX® HEAT-RESISTANT STAINLESS STEEL COMBUSTION CHAMBER for OIL BURNERS

For the *SMART* SALES MANAGER..

GETTING AN INTERVIEW IN THE FACE OF COMPETITION
TALKING TO THE HOUSEWIFE
REVIVING INTEREST IN AN OLD PROSPECT
A "SPECIAL" OFFER FOR CLOSING

..WHISTLES AID BURNER SALES!

It has been proven time and time again that VENTALARM tank fill signal is one of the things an oil burner purchaser *wants*. It lends itself to *selling* showmanship backed up by *real utility!*

You'll be surprised at the story that can be built up around this little inexpensive whistle. Just write to us for the booklet shown in the lower right hand corner! We'll be glad to send one for each of your salesmen. Presents four sound basic sales approaches using VENTALARM signal.

VENTALARM signal takes no extra time to install when making a new burner installation. Simply screw it into the tank vent opening and run vent pipe from top of signal in usual manner. Use VENTALARM signal Model LA or L (according to your vent pipe size) on new installations. Costs only $1.95 and worth ten times that to your customer in added convenience.

Salesmen get more interviews, arouse more interest, tell a more powerful story

Prospects like the idea of a burner with safe, automatic fuel delivery

Prospects like the idea of "protected privacy"—no need for oil man to enter home

FREE: Write to us for this sales-making booklet

available at your supply house

Model LC with slip fit for old tanks.

SCULLY

VENTALARM *Whistling* TANK FILL SIGNAL

T M REG U S PAT OFF

Canadian Licensee—EMPIRE BRASS Mfg. Co. Ltd., London, Ont. **SCULLY SIGNAL COMPANY** 72 FIRST ST. CAMBRIDGE 41, MASS.

here's one place you need "High Pressure"

HEIL PRESSURE ATOMIZING BURNERS BURN OIL BETTER... RETAIN ADJUSTMENT LONGER

Twenty-five years of research and experience in oil-fired heating have proved beyond doubt to Heil that the pressure-atomizing burner is the all-around most satisfactory means for burning oil. The testimony of thousands of service men bears out Heil's findings.

Pressure-atomizing burners are simpler, easier to adjust, more readily repaired. They hold adjustments far longer, have far fewer parts to get out of alignment, to wear out and cause trouble. Hundreds of thousands of installations stand as evidence. It's a strong, solid story, so get out and tell it—*sell pressure!*

HEIL Burners Are More Efficient

By any test, Heil Burners extract more heat from the oil. They can be adjusted easily for a high percentage of CO_2, to burn without annoying pulsations, and they *stay adjusted that way*. Heil uses cast iron, not aluminum or stampings, and Heil machines parts to closer tolerances, balances more carefully to assure better operation, greater freedom from trouble. For your entire protection, Heil tests *every* burner before it leaves the factory.

For your own satisfaction, write The Heil Co., Dept. 8149 today, and get the full story. It will interest you. Do it now, while a few territories are still open. You'll like doing business with a major corporation that remembers how to be human.

Plan to see us in Spaces 464-470 *at the Oil Heat Exposition, May* 16-20.

THE HEIL CO.

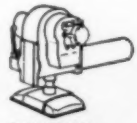
GENERAL OFFICES: 3081 W. MONTANA STREET, MILWAUKEE 1, WISCONSIN

Factories: Milwaukee, Wis.—Hillside, N. J.

District Offices: Hillside, Washington, D. C., Atlanta, Milwaukee, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Los Angeles, Seattle.

OIL-FIRED WINTER AIR CONDITIONERS

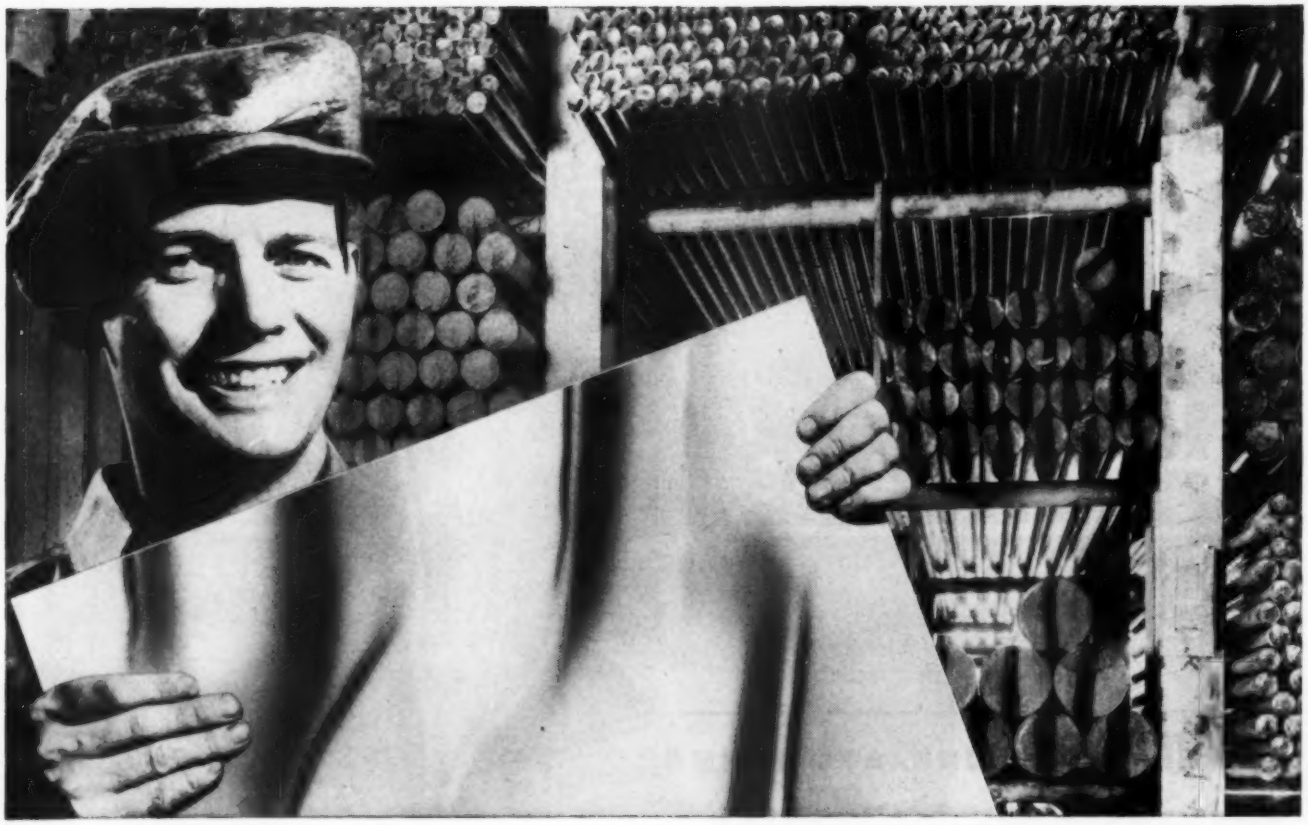
OIL-FIRED BOILERS



CONVERSION OIL BURNERS

GAS-FIRED WINTER AIR CONDITIONERS

Manufacturers of Quality Automatic Heating Equipment Since 1924



Recommend Stainless

—and Call Ryerson for Quick Service

You can please your customers and increase your profits by recommending stainless. Use Allegheny Stainless when sheet metal jobs call for longer lasting, better looking materials. Quick, convenient Ryerson service provides the stainless you need *when* you need it—in any quantity, any type, gauge or finish.

When you call Ryerson, you get Allegheny Stainless—the time-tested product of America's oldest producer of stainless from America's pioneer stainless distributor. A quarter-century of stainless experience enables Ryerson to help you in specifying and fabricating this profit-building material.

Your regular shop equipment is sufficient for fabrication of Allegheny Stainless in most sheet metal applications. Your stainless customers will profit because this beautiful heat and corrosion resistant metal requires virtually no maintenance. Often it costs no more in the long run than other materials regularly used for quality jobs. So go after stainless business and get quick shipment from your nearby Ryerson plant. We'll be glad to work closely with you.

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BARS—Carbon & alloy, hot rolled & cold finished

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PLATES—Sheared & U. M., Inland 4-Way Floor Plate

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This complete and detailed guide to Allegheny Stainless Fabrication mailed on request. Write for your copy today.

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AMERICAN ARTISAN

If Prices or Sales Drop X Per Cent

THE recent shift to a buyers' market is creating a need for strict control of business pricing policies, and contractors of this industry are not immune to the effects of this shift on their business. The costs of doing business have become dangerously high during the past two years. But despite scarcities and soaring costs, the sellers' market has readily absorbed all price increases in the immediate past because there has been an insatiable demand for all commodities. We are now entering a period when it will be more difficult to operate a business at a profit, one of management's prime responsibilities.

Business was never better than it was last year. However, after eight years of easy-come and easy-go, business in 1949 is suddenly confronted with a buying public that has had its first taste of lower prices—and it is looking for still lower prices. The price of many commodities has started to ease and sales volumes have started to shrink. There has been a softening across the entire business front. Yet the high cost of business continues and further increases in such items as labor and taxes threaten. Breaking prices and shrinking volume intensify management's problems by squeezing profits which lie in a small area between sales and costs. Many warm air heating and sheet metal contractors are now feeling these influences. Pressure is being applied in every quarter to bring housing prices down into more fertile market levels.

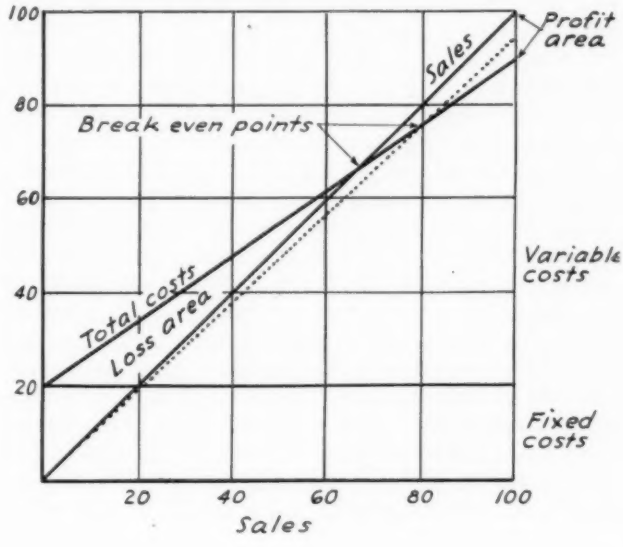
There is a vast untapped market for housing but most authorities agree that only lower prices will open it because the demand at present price levels has been satisfied. Competition in the construction industry will cause, in some cases, reckless price adjustments and meeting this new situation will necessitate tight management policies because no business can afford to sell its products and services at a loss. The demand for lower prices will require adjustments that must be made intelligently. Costs do not reduce by wishful thinking. Yet it is just as unwise to disregard the need to adjust prices to meet current conditions as it is to slash prices in an attempt to maintain sales volume.

What is the profit or loss position of a business if prices or sales drop x per cent? Where does profit end and losses begin? This is called the break-even point, a convenient tool for management which quickly reveals the point where the sales income equals total costs, where there is no profit. It is the point where a business starts trading dollars and where further reductions in either sales volume or selling price causes a loss unless offset by reductions in costs.

The chart shows how the break-even point may be established. It may be developed from a profit and loss statement at any time it is desired. It is accurate with respect to the distribution of the sales dollar into fixed costs, variable costs, and profit for the sales volume at the particular time. Other projections, such as the break-even point, are approximations but sufficiently accurate to show the trend of profit for different conditions. In the chart, fixed costs are indicated as accounting for 20 units of income, whatever the sales volume may be. Included are such expenses as rent, heat, salaries, depreciation, etc., items that are fixed regardless of sales volume. Variable costs account for 70 units of income at the sales volume upon which the chart is established. Included in this are labor, material, and other items that are incurred by sales. For convenience total costs are shown as a straight line function although its true course would show a higher ratio at lower sales volumes. Where the solid lines sales and total cost intersect, profit vanishes. It establishes the break-even point if prices and costs remain constant. As indicated, the entire sales dollar would be spent in meeting business costs if volume reduced from (say) $100,000 to $66,667.

The dotted line shows how the break-even point advances with a drop in selling prices, in this case 5 per cent. The break-even point has advanced to $80,000. If prices were reduced 5 per cent, the entire sales dollar would be spent in meeting business costs when sales volume reduces to this amount.

The value of the break-even chart during a period of readjustment, when the pressure on both prices and sales volume is downward, is obvious. Its simplicity as a guide for management to check the course of business profits warrants its periodic use.



Arnold Kruckman's

THE independent and smaller units of business have suddenly become definitely clamorous in Washington, D.C. In March they began to make themselves felt as never before. The impulse apparently sprang from various legislative phenomena coming to life on the Hill. Taxes have always been a barb in the side of the independent smaller businessmen and had some effect upon the present stirring among them; but apparently the greatest irritant has been the effort to increase the minimum wage rate from 40 cents to 75 cents an hour, particularly to make a proportional increase apply to overtime and double time and all the various involutions of wage demands. There has not seemed to be so much violent opposition to the increase in minimum rate per hour for normal work-time, but many widely diverse industrial leaders have strenuously opposed the proportional increases in overtime and so forth. For instance, the men who employ the workers on river towboats and barges found that the proposed increases would almost compel them to cease some operations; and these operators deem themselves definitely small business as well as presumably independent even though their investment is never less than $2 million to $3 million per industrial unit. Incidentally, this highlights the fact that the appellation of small and independent business is almost purely relative.

How Small Is Small Business?

This reporter some weeks ago, while traveling in the South, met a man from Birmingham, Alabama, who revealed that he is a manufacturer of cast iron soil pipe, with a plant at Birmingham and another on the western slope of the Rockies. He employs over 3,400 people in both plants. He considered his business small and independent in relation to the average units of his industry. Yet he was aggrieved to find that he could not be bracketed in the smaller business group because he employs more than 500 persons. The definition of smaller independent business announced by the Armed Services, and by the Senate small business committee, puts the limitation of the employment of less than 500 persons upon any business which wishes to be classified as small and independent. Also, no business comes within the category of it is a subordinate part of a larger unit, and if it is not completely independent and self-sustaining. The matter of an exact definition is important because there are at least 3 million units in the category of independent smaller business according to the census, and to other reliable agencies of the Federal Government. Some estimates are far higher. It is calculated that there are at least 30 million persons in the independent smaller business population, possibly even as high as 40 million according to Federal officials. The matter of the definition is important now, because it is becoming apparent that independent smaller business is an awakening giant, and that the time is coming when Washington must know what and who is smaller business, and how the political population can handle the giant to its own more active profit. As a matter of fact it appears increasingly difficult to define independent smaller business by using such an equation as the number of employees. There are now a number of persons who are working on the problem, some of the most competent of whom are not connected with Government. There is no doubt the sheep will be separated from the goats by the usual natural processes that govern such matters in the evolution of all large movements. Meanwhile, you can get the drift by what is already on the horizon. For instance, one of the most militant fighters for the greater good of smaller independent business is the group known as the service industries. Among the many statements which have flooded the Capital during March, for the attention of the Congressmen and Senators on the Hill, is this one, which comes from the man who leads the nation's laundry industry:

"All of us in the laundry business talk a lot about our great American system of free enterprise and government," wrote Albert Johnson, secretary-treasurer, American Institute of Laundering, at Joliet, Ill. "All of us like it. We all know it is the best system in the world. But there must be times when other people might think we don't understand it.

"Our business leaders are the natural defenders of our free enterprise system. They can't afford to stand beside the 'wailing wall' during the next four years. These business leaders are going to have to organize and mobilize the millions of small stockholders that really own the large corporations that they manage. The stockholders of American corporations and the policyholders in our large insurance companies have a powerful influence. They also have a tremendous stake in our free enterprise system. If they are not mobilized to conserve that stake, the trend over the last 15 years towards socialism will finally wipe out their investments.

"Unfortunately businessmen—and that means laun-

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dryowners—have not been the militant force they should have been in resisting the socialistic trends. We can't remain a free people and still have socialism (or fascism). We can't be neutral in the battle that is going to be fought in the halls of Congress in Washington between free enterprise and socialism (or any other ism that tends towards totalitarianism in any guise). If all of us who believe in the free enterprise system are not willing to fight for it, then socialism (or one of the other isms) is bound to be our lot.

"It is under the American system of free enterprise that our people have the opportunity to earn, to save and to invest. These privileges must be preserved.

"Interest in government has to start at the local level. If all of us took enough interest in local and state governments, there would soon be an improvement in Washington. All these things start 'back home'. It is actually the lack of interest on the part of businessmen in their local governments that has encouraged so many of the present socialistic (and other un-American ideas) in Washington. *If this kind of thinking is carried to a logical conclusion then we are bound to end up with an all powerful form of centralized government, which will take over the responsibilities of local communities and states.* (As already appears in the Authorities, and proposed River Basin regional Federalization.) The government then becomes the master and not the servant of its citizens.

"There never has been a time when clear and sound thinking was more needed in our local, state and national governments than now. Laundryowners, like all other businesspeople, should do their part actively in helping to encourage the men who are trying to preserve our free enterprise system and American form of Government."

An Interpretation

George F. Meredith, the past two years head of the Senate small business committee, and recently chosen as executive director of the National Independent Business Committee—of which more later—points out that this ringing statement by Mr. Johnson should be read with the thought that Mr. Johnson has in mind the essential Democracy of this nation when he spotlights "free enterprise." In the sense he uses it, and as others use it, it means the very core of the philosophy which is the driving force of our national political, social, and economic life. Free enterprise can only be founded on liberty, competition, and individualism. There is no incentive in a system built purely on cooperation, on the leveling effect of the system which is built on the technique that I will scratch your back if you will scratch mine. And Meredith points out that the major interests, be they labor, agriculture, government, or business, all follow trends that constantly narrow to the inevitable sequence of totalitarianism, controlled governments, in which the centralized forces at the heart of the mechanism make all the other components work for them. Apparently the label under which they function—socialism, communism, fascism, collectivism—is chiefly a different arrangement of letters with different phonetic results that really end up at the same place. They are all in sharp, direct opposition to the thing which we have had in America under a capitalistic system, and under what we can only define as Democracy. There is no doubt that the independent smaller businessman has become keenly aware of the peril to the thing which has enabled him to be an independent smaller businessman. This awareness has become obvious to Washington the past five or six weeks as it has never been real before.

Efforts at Coordination

For a number of years people like the Gaunts in New England, Habegger in Indiana, Dr. Arthur E. Morgan in Ohio, and others everywhere, have worked to arouse the independents in business to a consciousness of the need that they must work together, in the same manner as the farmers finally formed a coalition, and as labor, after many abortive efforts, finally brought into existence its great unions. Some twelve years ago Tyre Taylor, a wise and humane lawyer from North Carolina, was retained by the National Retail Grocers Association, of Indiana, to make an effort to unify independent smaller business for defensive and protective common objectives. Taylor held meetings in the Department of Commerce auditorium with the blessings of the Secretary of Commerce; he held conferences of leaders in his own offices on historic Jackson Square opposite the White House. He patiently worked through the stewing, simmering Washington summer days, but the inertia was so great that he finally gave up. There was nothing to shock the people most concerned into a consciousness of what was happening to them and their way of life.

Even recently, the difficulty of organizing these independent smaller business folk into something that would adequately represent them, all but discouraged men like George F. Meredith, who probably knows

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Heating Wholesaler—Distribution's Driving Force

WILLIAM H. RIGBY
Herrick Company
South Boston, Mass.

W. H. Rigby

In this article the author outlines the important functions and services of the heating wholesaler as a fundamental link in the chain of distribution. His company maintains four warehouses in New England, each distributing a large volume of heating equipment in its trading area. Mr. Rigby, manager of the Heating Division, was formerly sales manager of a large manufacturing company and so knows both sides of the distribution story. He is also a director of the National Heating Wholesalers Association.

ONE of the most difficult tasks facing a business enterprise today is the distribution of its products. A manufacturer, for example, has problems of production, finance, and distribution but the first two are internal and tangible and are not too difficult to solve because they are subject to local control. On the other hand, distribution is complex. It is intangible, not subject to local control, and conducted over a broad front. It involves all the business activities required to move merchandise from the producer to the consumer. Merchandise must be available wherever there is a market for it, in the amounts wanted, of the kind desired, and at the proper time.

Distribution problems concern every manufacturer whether large or small. They concern particularly so-called small corporations because, as a rule, they do not conduct their own market research programs and are dependent upon others for marketing data.

The inherent complexities of distribution are summarized in the terms "buyers' market" and "competition," into which we are now moving. This type of market has existed at all times except during war periods. Improvements in production facilities prior to World War II especially, such as assembly lines and other mass production methods, have intensified distribution problems manyfold and have magnified the importance of the wholesaler in the efficient distribution of manufactured products.

In the past, a manufacturer was content to distribute his products in his immediate locality, which of course did not present a great problem insofar as his sales organization was concerned. However, the introduction of large scale production methods and specialized labor and machinery has necessitated an expansion of market areas and has widened the gap between the producer and the consumer. The wholesaler has served in bridging this gap.

Functions of the Wholesaler

As business moves into a buyers' market, the wholesaler is again becoming more and more the accepted link in the chain of the present-day distribution system. The functions of the wholesaler become a necessity if the flow of goods from manufacturer-to-retailer-to-consumer is to be smooth and economical. In fulfilling these functions diversified activities are necessary. It often requires the gathering of numerous items, such as registers, sheets, fittings, angles, bars, gutters, tools, and supplies from numerous sources, a group of which may be required by a dealer to complete his sale to the consumer. In the heating industry, the wholesaler often finds it necessary to stock several thousand of these items to serve his trading area. Substantial inventories, often augmented with warehouses and branches in other thickly populated areas, overcome the lag that would normally develop between the producer and consumer if it were necessary to make small shipments over long distances.

Ample stocks of equipment and supplies are required for a warehouse to serve its market area. Each dealer's needs must be fulfilled with the least amount of delay. Such inventory requirements are not profitable for the average dealer. He usually does not have the warehouse space for the wide range of types and sizes of equipment sold or the capital required to maintain it. If he has ample capital, a wholesaler's stock enables him to concentrate his resources on work in process instead of inventory. To receive, warehouse, and distribute a

large and varied inventory requires a larger investment in merchandise and material handling equipment than would be economically sound for a large dealer to maintain. Economical facilities for warehouse operations today include traveling cranes for unloading cars, overhead cranes for carrying materials to their places in the warehouse, motorized floor trucks and other mechanical equipment to speed the receiving and shipping of the warehouse stock.

Figures Can Be Misleading

The wholesaler relieves the manufacturer of a multitude of credit responsibilities. While this second function is not the most important, it is of sufficient importance that it should not be overlooked. A local credit department is in a better position to supervise accounts within a market area. Cold figures, when judged from a distance, can be misleading as there are other qualifications which tell whether or not a man is a good credit risk. While local credit supervision usually resolves to the advantage of the dealer, it provides also a definite advantage to the producer. It allows him to concentrate his credit activities and financial counsel on a small number of wholesale accounts and assist them in maintaining a sound financial condition. By so doing the manufacturer lessens his own credit risks.

Without a doubt, a wholesaler's most important function lies in the coordination of his sales department with the manufacturer and in the assistance he can give the dealer by developing sales promotion and advertising programs. While more competition for the consumer dollar developed in 1948 than in the previous postwar years, it is quite apparent that 1949 is more competitive and will require that manufacturers, wholesalers, and dealers coordinate their sales and advertising activities in order to realize anticipated sales volume. Economists generally agree that competition within industries will increase greatly this year and that there will be intense competition between industries for the consumer dollar. Coordinated efforts by all elements in the distribution chain of the heating and sheet metal industry will insure that the industry will receive its share in the competition for the consumer dollar.

Wholesalers generally strive to furnish a dealer with more personal sales, advertising, and promotional assistance than he receives if he were buying direct from a manufacturer located some distance away. Sales assistance and merchandising aids allow the wholesaler to carry the same promotional activities through local warm air heating and sheet metal contractors to the consumer that the manufacturer provides through his own sales organization in its contacts with wholesalers and the consumer.

Representatives Cooperate With Dealers

Most wholesalers endeavor to employ competent representatives who will make an effort to acquire all possible knowledge relating to the equipment they are selling. While many items do not require specialized knowledge, sales personnel should be well qualified to give the dealer all the assistance he needs for the correct engineering and application of mechanical equipment. Many opportunities of close cooperation with dealers have been developed through engineering schools which offer opportunities for sales guidance as well as training for the design, installation, and service of mechanical equipment. Point-of-sale display material, newspaper and radio announcement services, direct mail literature, catalogs, and other selling aids furnished by manufacturers are put to good use when directed through these channels.

When representatives make an effort to contact each dealer at regular and specific intervals, the dealer is encouraged to organize his work in such a way that he receives the greatest assistance possible with sales, service, and engineering problems.

The *Indoor Comfort* Conferences of the National Warm Air Heating and Air Conditioning Association have been especially valuable in fulfilling the need for engineering training in many areas and many wholesalers have assisted in organizing and promoting attendance at these schools. The conferences have been a tremendous aid to dealers and have lessened their dependence on engineering services. Also, they have

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Main office and warehouse of the Herrick Co., showing the truck loading and overhead crane facilities which make material handling a simple matter. On the other side of the building are located the railroad spur and trackage which serve this large volume distributor.

Your Sales Expense Can Cause Trouble!

ARTHUR ROBERTS
Pompton Lakes, New Jersey

As the overall economic picture tightens, the need for efficient sales programs becomes more acute. But the contractor must keep his sales expense in line with his other costs or he will find himself losing money.

THE wise *Indoor Comfort* dealer employs outside salesmen to keep volume high, but most of these dealers do not get maximum results because they base the compensation paid to salesmen on a ratio to sales. They focus all attention on the sales figure versus selling expense and push for more volume on the assumption that the net profit will increase in direct ratio to the increased sales.

Like all other workers, salesmen are demanding more money and must be kept satisfied if the dealer is to get the most benefit from their efforts. This is why some dealers use profit-sharing plans of one kind or another. However, the dealer must see that the compensation paid salesmen is not only fair to them, but fair to his business, that his selling salaries are kept in safe ratio to net profit. If sales are his yardstick, the dealer won't get the right answer to this problem. He should consider this expense in relation to the following factors:

1. Margin on sales
2. Percentage of selling payroll to margin.
3. Percentage of sales you can afford to pay based on that margin.

Many dealers, to their disadvantage, use the payroll-to-sales percentage as a yardstick when appraising the soundness of their salesman compensation plans and overlook the more important payroll-to-margin percentage. The margin on sales (gross profit) remains fairly constant in the individual business and is readily determined. Selling expense, overhead and net profit must come out of this figure. The percentage of margin you can safely pay must be the yardstick with which you measure the payroll-to-sales ratio. In our work as a public accountant, we find that many dealers compute salesman compensation on a payroll-to-sales ratio figured in hit-or-miss fashion when margins differ with the individual business. Bad managerial practices, the lack of aggressive promotion, inadequate or badly balanced stocks, keener competition, the volume sold, and other factors, may give one dealer a lower over-all margin than another, so figuring the payroll-to-sales ratio without considering the payroll-to-margin ratio is hazardous. If a dealer is frozen to a certain payroll expense, he must manage his affairs so that the payroll-to-margin ratio is kept in the safety zone by holding down costs, adequate accounting methods, a bigger assortment of stock and more aggressive promotional methods.

The following figures show clearly that margin should be considered in any successful method of compensating selling employes:

Dealer Jones

Sales for the year		$50,000
Margin on sales—40 per cent	$20,000	
Selling payroll—18 per cent of sales	9,000	
	$11,000	
Other overhead expense	8,400	
Net profit for year	$2,600	

Dealer Smith

Sales		$50,000
Margin on sales—35 per cent	$17,500	
Selling payroll—18 per cent of sales	9,000	
	$8,500	
Other overhead expense	7,000	
Net profit for year	$1,500	

Dealer Jones earned $2,600 net profit during the year, Dealer Smith earned only $1,500 during the same period, yet they both had the same sales volume ($50,000), and the same selling payroll-to-sales ratio (18 per cent), and Smith's overhead was less. Now, let us analyze the breakdowns of margins earned by these dealers.

Dealer Jones

Selling payroll	$9,000	45 per cent of margin
Overhead expense	8,400	42 per cent of margin
Net profit	2,600	13 per cent of margin
Total	$20,000	100 per cent of margin

Dealer Smith

Selling payroll	$9,000	51.4 per cent of margin
Overhead expense ...	7,000	40.1 per cent of margin
Net profit	1,500	8.5 per cent of margin
Total	$17,500	100.0 per cent of margin

Dealer Jones can afford an 18 per cent payroll-to-sales ratio because he has the payroll-to-margin ratio that can stand it. Dealer Smith, even with a lower overhead against the same volume, cannot afford an 18 per cent payroll-to-sales ratio because the payroll-to-margin percentage is too high. When this ratio exceeds 45 per cent, it is time to take steps to reduce it. Some dealers cannot operate at this ratio and earn satisfactory profits. It all depends upon managerial efficiency, the type of merchandise sold and other internal factors. If a dealer earns a high average margin on sales because he is a topflight merchant, he can afford a bigger payroll-to-sales ratio than a dealer who sells at a lower average margin. We do not offer standard ratios for dealers to follow. There are none. The dealer must set up his own standards from a study of experience figures and check results with the formulas given in this article to see that the selling payroll-to-sales ratio is kept in the safety zone and not allowed to become excessive. Our purpose here is to point out an element of business operation that must be watched most carefully because it has a big influence upon ultimate profit.

Get Your Own Figures!

The foregoing figures, which, by the way, are not intended to represent the ratios of any dealer, but are merely illustrative, show clearly why some dealers can afford to pay a higher payroll percentage on sales than others. And yet, when remunerating selling employees or analyzing the results of operation, compensation is often computed on the basis of sales and checked against the average figures for a group, or the entire field, although differing margins make such procedure hazardous. Even a variation of one or two per cent on margin may increase or decrease the net profit as much as 30 per cent or more. Analyze your own margin, using the formulas given here, to find out what compensation you can afford to pay your salesmen and don't depend upon someone else's figures.

Sales resistance is increasing and this tends to increase selling expense and decrease margins. The harder it is to sell, the more its costs to sell. From now on, the dealer should keep an eagle eye on selling expense and the best way to appraise this outlay is to check it against the average margin shown on the profit and loss statement.

Dealers go off the beam in another way on their payroll calculation. They assume that because they own the business and pocket the ultimate profits it doesn't matter whether they appear on the payroll and include a reasonable salary under overhead expense for their services. The alternative is to dip into the till for what they want, when they want it, and charge it to the boss in order to keep the bank account in balance with the books. The gist of their thinking on this subject is typified by a remark one dealer made not long ago. "What's the difference if I charge expenses with a salary for my services or omit the charge and let the money swell the net profit?" He went on to explain that he drew $3,000 compensation a year, but that if he included this sum under overhead he would have $3,000 more expense and $3,000 less profit. If he didn't include it, he would have that much less expense and that much more profit, and so, he'd bank the same amount during the year and end up with the same bank balance. This is faulty reasoning and it can cause trouble.

Take Dealer Johnson whose condensed profit and loss statement shows the following figures:

Sales	$50,000	
Cost of sales	30,000	
Margin on sales	$20,000	
Overhead expense	15,000	30 per cent
Net profit on sales	$5,000	10 per cent

Suppose Johnson has charged no salary for his own

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Boost Employee Efficiency With a Pension Plan

BETTY LEE GOUGH
New Orleans, Louisiana

Recent years have seen a great increase in interest in pension plans and this article discusses their general characteristics. The author points out that even small firms can initiate pension plans.

"IF YOU could hit upon a scheme to reduce your employee turnover," remarked the heating contractor, "and, at the same time, increase the efficiency of your employees and this scheme cost you relatively little, you'd be mighty interested, wouldn't you? Well, I have such a scheme. It is the employee pension plan."

That a pension plan can increase efficiency has been known for a long time. That it can be set up without the expenditure of a great deal of money is not so well known. But the fact that a pension plan can fit even the smaller company is almost unknown. Yet, all of these things are true. A pension plan can help you as an employer, as well as benefit your employees, even if your business is small.

What Are Pension Benefits?

The man who made the statement quoted heads a small heating company that employs only a few persons. Yet, he has set up a pension plan for his employees that is as complete, in its way, as the pension systems of big national corporations. Here's how he looks at the advantages of a pension plan: "First, it lets us retire older men who have been here a long time. We couldn't just fire a man who had been here for years. It would be wrong and not even smart business because it would create ill feeling. Also, it might be bad customer relations as well, if the word ever got about. Yet, a man who has long passed his prime is certainly no asset. He is unable to do the quality of work a younger man could do, and he is definitely unable to turn out the quantity of work he should for his time to be valuable. If I fire him, I lose. If I keep him on, I lose.

"But, if I retire him on a pension, he is happy because his old age has been provided for. I'm happy because I can take on a younger man who can turn out better work and more of it. And my other employees are happy; they know that if they stay here they will be similarly provided for, when their retirement ages roll around.

"That's not all. My employees have a more willing-to-work spirit, and they are more loyal than most. We operate more efficiently because of this, and because labor turnover has been tremendously reduced; I'm not looking for new men every six or twelve months. They seldom think of leaving now; they have too big a stake in remaining with the company."

A recent survey of management officials showed that they think most labor unions and employee groups only want higher pay. But a similar survey of the employee organizations showed a different picture: What employees want is security. A pension plan gives them that.

How Is Plan Set Up?

What must you do to set up a pension plan? Very little effort, and a surprisingly small cash outlay, is needed. You can follow either of two simple paths. Banks (through their trust departments) and insurance companies all handle pension plans for employers. It is impossible to detail a complete, workable pension plan that will fit every heating business, because there is no such thing. A pension plan is like a suit. It must be fitted to its wearer, if it is to do the job intended. The pension system that worked excellently for Joe Jones may be a very bad one for Sam Smith. Many factors govern the choice of method: your finances, the number of your employees, their present age, the amount of money which you wish to pay out upon retirement, whether you pay the entire bill or have the employees pay their part too, whether you want to include hospitalization and group life insurance, what provision you want made for the employee who dies before reaching retirement age. These and many other factors must enter into the planning of a truly effective retirement plan for your employees. To bring the maximum benefit to both the company and its employees, a pension plan should fit all of the individual conditions of your own set-up.

We do not attempt to give here a blueprint of a model pension plan. Your bank or insurance company

will help you to tailor an individual plan. Their services are usually available without charge. Before consulting the trust office of your bank, however, you should have a good idea of some of the factors that will govern your choice of a pension system. Here is a question and answer conversation that occurred recently when the owner of a small heating business consulted a pension expert:

Q. "How much will a pension plan for my employees cost the company?"
A. "That depends. It can cost you very little. It can cost a pretty fair amount. What you want to pay is up to you. There's only one thing to remember: It costs you money *not* to have a pension plan, too. This cost is apparent when you consider that an elderly man is not as active as a younger man, and cannot turn out the same kind of work. Moreover, you get increased efficiency and better work from employees who like the company. And they usually do like a company that provides for their old age."

Many employers feel duty bound to provide for their worker's old age. It can be done at not too great an expense.

Q. "What factors govern the cost of the plan?"
A. "One factor is whether you pay all the freight yourself, or whether your employees also contribute through a wage deduction. Another factor is the size of your payroll. A third is the present age of your employees. A fourth is the retirement age you set. If you have a man only two years away from retirement age when you inaugurate the plan, it is obvious that he's going to cost you plenty, because if you are able to lay away the money over many years you not only have the backlog of funds, but you have the compounded interest it has drawn (or the dividends, if it has been invested in stocks)."

Q. "Is this money tax free now?"
A. "Yes."

Q. "When should I begin payments toward a pension fund for my employees?"
A. "As soon as you begin the plan. Right now, preferably. It is a poor policy to expect to be able to meet the payments when your employees reach retirement age. That's a good way to put your company in a hole. When the pay-off time comes, times may be bad and you may not be able to afford retirement payments. But, if the money has been regularly set aside, it's there when it is needed. Your capital is not drained."

Q. "Suppose I start with certain yearly payments toward the retirement fund, and hard times do hit, can I then reduce the size of my pension fund payments?"
A. "You surely can. You might begin by setting aside 15 per cent of your payroll for an employee pension fund, and later find that your company cannot afford this much money. You can always reduce the size of the payments you're making."

Q. "Which is better; an employee-participation plan under which the employees chip in a deduction from their pay to go toward the fund too, or a plan under which I foot the entire bill?"
A. "That's like asking which is better, beef or chicken. Both are good. The merits of each must be decided in view of the individual employer's circumstances, and the set-up of his company.

"Having the employees participate in payments to the pension fund has two advantages: It reduces the money burden borne by you, and it gives your employees an increased interest in the pension plan, because their dollars are in it and they own a share of it. On the other hand, there are advantages to making all of the payments from the company's payroll funds. One is that you have complete control over the plan. Should you decide to make any change in the set-up, you can do so without securing any approval.

"Another thing to consider is that in an employee participation plan there must be a provision for those who leave your employ before reaching retirement age. Let's say that John Doe quits his job after contributing to the pension fund for five years. You can't declare

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Advertising Answer Page

DAVID MARKSTEIN
New Orleans, Louisiana

WHAT is your advertising problem? Are your ads pulling, and if they aren't, or if you're uncertain as to what should be done, how can you get information on writing and preparing *Indoor Comfort* advertising?

Beginning with this issue, we're running a regular column of advertising questions and answers. If there's anything stumping you; if you are curious about any phase of *Indoor Comfort* advertising, from writing headlines to the mechanical processes of advertising reproduction write to this column.

Here are two early-bird questions that bear upon vital problems of advertising:

The Small Ad Problem

Q. "My firm runs mostly small ads. What can we do to put the greatest amount of punch into them, and give them attention value so they can compete for the reader's eye on a busy newspaper page?"

A. The Advertising Research Foundation, under sponsorship of the Association of National Advertisers and the American Association of Advertising Agencies, has carried on a continuing study of newspaper advertising. It's been functioning since 1939. One of the things they set out to discover in this study was what gives an advertisement eye-catching appeal.

Many business men and many professional advertising men, as well, believe that an original touch, some gimmick or style note that's different from the established advertising pattern, is the secret of securing readership for small advertisements. But the continuing study indicated that this theory is in error. Indeed, any attempt to put punch into small advertisements by the use of too-original ideas and style actually *lowered* the readership.

The small advertisements that followed the tried and tested rules for mass selling were those that scored highest in reader interest and attention. Turning and twisting the type, or running it upside-down, likewise reduced the readership. Too much black-on-white cut down the number of readers and too many illustrations did the same thing. Extra heavy type faces merely confused the readers to the point where their eyes skipped the advertisements' vital messages. Distinctive borders were a drawback, reducing rather than increasing the readership.

What, then, was the formula for increasing small ad readership? The study found that the *simple* ad grabbed the most readers. The layout should be simple and the ad easy to read. It is possible to use complicated and intricate patterns in a large advertisement where there is plenty of space to play with. But the small ad must be simple.

The studies proved an important fact. Two techniques are almost sure-fire attention-getters for small advertisements. They are cartoons (or comic strip continuity technique), and photographs that have human interest, such as photos of people.

In one issue of a metropolitan daily newspaper, the Advertising Research Foundation set out to discover how many people had seen and read the smaller advertisements. Here's how they ranked: An ad employing the technique of a single cartoon, with the punch line putting over the selling plug was read by 31 per cent of the men, and 32 per cent of the women who bought that issue of the paper. Another ad using the same style was seen and read by 33 per cent of the women and 45 per cent of the men. A comic strip continuity ad (such as the toothpaste ads that run in Sunday comic sections) had a readership of 19 per cent of the men, and 17 per cent of the women. Elsewhere in the paper, a small ad measuring only one column by 53 agate lines was read by 11 per cent of the women and 7 per cent of the men. It used the human interest photo technique, taking half of the space for a good portrait. Another small ad, two columns by 176 lines, had a readership of 17 per cent among the women and 10 per cent among the men. It also employed the human interest slant.

If you're planning to use models in your advertising, it is a good idea to choose your photograph with two things in mind: First, it should relate the product to the person and not be just a photograph of leg art. Second, it should be simple, without too much distracting background.

Repetition of Ads

Q. "I often advertise the same thing over and over. Is it better to run the same ad many times, or should I design a different ad each time I run it?"

A. Advertising agencies and the national advertisers are constantly testing various procedures in an effort to reduce what was once a hit-or-miss proposition in mass selling to an exact science. Not long ago, 300 industrial advertisers and publishers sponsored a $15,000 test to find the answer to this question. Their find-

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Sparkling Showrooms Step Up Sales

Here is a topic which has been dealt with before on these pages and deserves still more attention, the editors feel. The appearance of a heating contractor's place of business is likely to make a strong first impression on your prospect. Be certain that impression is a good one.

NOT long ago, the owner of a New York *Indoor Comfort* firm sat down to puzzle out an answer to a tough business problem. He had noticed that, while his sales volume remained static, that of his competitor across the street was growing by leaps and bounds.

He determined to try some stronger sales promotion methods. So he embarked on a heavy advertising campaign. The result, he quickly noted, was that a great number of customers were brought into the area but most of them stopped across the street in his competitor's showroom. He wondered: Why did customers obviously prefer his competitor, even when they had been pre-sold by his advertising? To discover the answer to this question, he sent his assistant over to inspect his competitor. He carefully instructed the assistant to look for any factor that the customers seemed to like.

He was back within an hour with a report. It was simple, said the assistant. The other office had only one thing in its favor, *it was clean*. In contrast, the puzzled contractor's shop and office were a hodgepodge, and the floors were often littered with dust scuffled in from the street. There was no order or method, and there was little cleanliness.

The *Indoor Comfort* dealer scratched his head in amazement. Could such minor things as clean floors, orderly displays, and gleaming front windows make a difference in sales?

The plain fact is that they can and do, as the puzzled New York contractor discovered when he spruced up his place, instituted a daily housekeeping procedure, and began to see the customers that *his* advertising had attracted coming to his showroom instead of his competitor's.

Importance of Clean Surroundings

Good housekeeping is more than the name of a popular women's magazine. It is a business procedure of the utmost importance. You may have the values and you may know how to mass-sell them to prospects, but if those prospects see a sloppy front, a littered floor, and a general atmosphere of mingled dirt and confusion, they are likely to think much less of you than they did when they first saw your advertisements.

It is an old axiom of selling that to turn prospects into customers it is necessary to make a smashing impression at the point of sale—your showroom, in this case. How can the average contractor institute a regular program of good business housekeeping? How can he keep it simple? Can good housekeeping be reduced to an easy daily procedure that will keep the shop and the office inviting and, at the same time, make them an efficiently operating machine?

In a firm in a small town in Wisconsin the owner has reduced his business housekeeping to just such a system. Here is how he does it.

"First," he said, "I spent three days straightening up and cleaning the place myself. I wanted to familiarize myself with the steps that had to be taken every day in order to keep it spic and span. Each day, I noted on a pad everything I'd done. Next day, I tried to simplify it a little. By the third day I was as familiar with the set-up as a cleaning woman with the fixtures and floors she cleans."

Business housekeeping, this Wisconsin contractor found, can be reduced to a simple daily check list of things to do. Each morning, the check list is gone over. Everything on it is carried out. In ten to fifteen minutes, all is bright and shining. Here is the check list—an easy daily chore:

1. Are the windows shining and clear?

It's better to have no windows than to slap the public in its collective face with streaky, grimy glass that, at best, makes your place seem undesirable. Keeping windows clean and shiny isn't a once-a-week task. It must be done every day. A mere drizzle of rain, or even a heavy fog can coat the glass with moisture that picks up all the floating dust and dirt in the air.

2. Is the sidewalk in front clean?

If you put your garbage, old boxes and other trash in front of your place, you not only create a hazard for pedestrians, making them tend to walk on the other side of the street, but you make your front uninviting as well.

It's best to place trash and waste in the back or in an alley way. But if there is no other place to put it for collection, observe two rules: first put it out only when the trash collectors are ready to pick it up; second, keep it in a neat pile to the side of your entrance rather than directly in front.

It's particularly important in a cold climate, to see that the entrance and the sidewalks in front are kept clear of ice and snow. In very cold weather, it may be necessary to shovel off the snow twice or even three times a day.

3. Are the floors inside inviting? Are they spotlessly clean?

Floors should be cleaned every day, regardless of the type of flooring you have, warns the Wisconsin con-

tractor. If you have wooden floors, they should be swept every day, preferably with a sweeping compound to remove all traces of dust. If you leave dust on the floors, the slightest breeze will swirl it up. In addition to a daily sweeping, a wooden floor should be mopped or scrubbed once a week. Then it should be waxed. But you've got to be careful with wax. Too much of it makes a slippery floor. Customers can fall and hurt themselves. Besides making you lose a customer's good will, such a mishap is quite likely to cost you money should the customer decide to sue. A method many find effective is to sprinkle powdered pumice very lightly over a freshly-waxed floor. Then there is no chance of a slip and fall, and you have a gleaming floor that is attractive to the customer's eyes.

In the case of linoleum or asphalt tile flooring, scrub it well at least once a week, and mop it daily. Linoleum and asphalt tile show dust more easily than do wooden floors. The rubber heels of customers who tramp across the floor leave marks that do not look pretty. Linoleum and asphalt tile should also be waxed periodically. Every six months, it's a good idea to go over them with a clear varnish or shellac.

4. Are the fixtures, shelves, counters, and desks spotless? Are the stock room and the shop in tidy shape?

An untidy stock room or shop won't hamper your sales or annoy your customers directly because they do not see it. Some contractors who are otherwise careful about good business housekeeping take the stand that an ill-arranged shop does them no harm. But here is what the Wisconsin heating man says:

"I've found that the stock room and shop should be kept just as neat as the office itself. Not that it needs to be swept, curried, shined, and pampered every day, but it does need regular working over.

"Sweeping and trash-collection are important there too. Having the space cramped and filled to overflowing with old boxes and other trash does not make it very efficient.

Here Is Daily Routine

"Here's the daily procedure I follow. Each morning, I hand a junior employee this check list of things to do. I tell him to see that every one of them is done. To make sure he's on the job, I occasionally make an inspection. I don't do this every day. Nor every week.

"On the average, he spends twelve minutes sprucing up the place before we open the doors. That twelve minutes is a good investment, I've found."

In addition to making your office and shop inviting, good housekeeping can conceivably be the salvation of your business.

"If you doubt that," says the Wisconsin contractor, "ask yourself this question: What would happen should a fire break out? You may have insurance, but would your insurance fully compensate you, not only for the loss of building and fixtures, but for the profits you might have been gathering during the time it takes you to rebuild?

"In the light of that possibility, remember that most fires start with loose trash. And remember that good business housekeeping is good business."

NEWS SUMMARY OF THE MONTH

Galvanized Steel Price Drops

Inland Steel Co. announced that, in line with the automatic provisions of its pricing schedule, its prices on galvanized sheets have been reduced $4.50 per ton effective March 24, 1949. These reductions reflect the drop in the price of zinc from 17½ cents to 16 cents per pound.

NWAH&ACA Mid-Year Meeting

THE NATIONAL WARM AIR HEATING and Air Conditioning Association will hold its annual mid-year convention Tuesday and Wednesday, June 21st and 22nd, at the Edgewater Beach Hotel, Chicago, Illinois.

With the mornings devoted to business and the afternoons to fun, a full two-day program is announced by Mr. George Boeddener, secretary-treasurer of the association.

The program committee has scheduled a number of informative reports covering recent developments in the association-sponsored research program at the University of Illinois along with the chairmen's reports of activities of the various association committees. Arrangements are being made for guest speakers to talk on timely subjects of special interest to all warm air heating men.

Scheduling of afternoon entertainment of golf tournaments, races, bathing and other recreational facilities is underway by the Chicago Convention Committee.

Oil Supply Ample

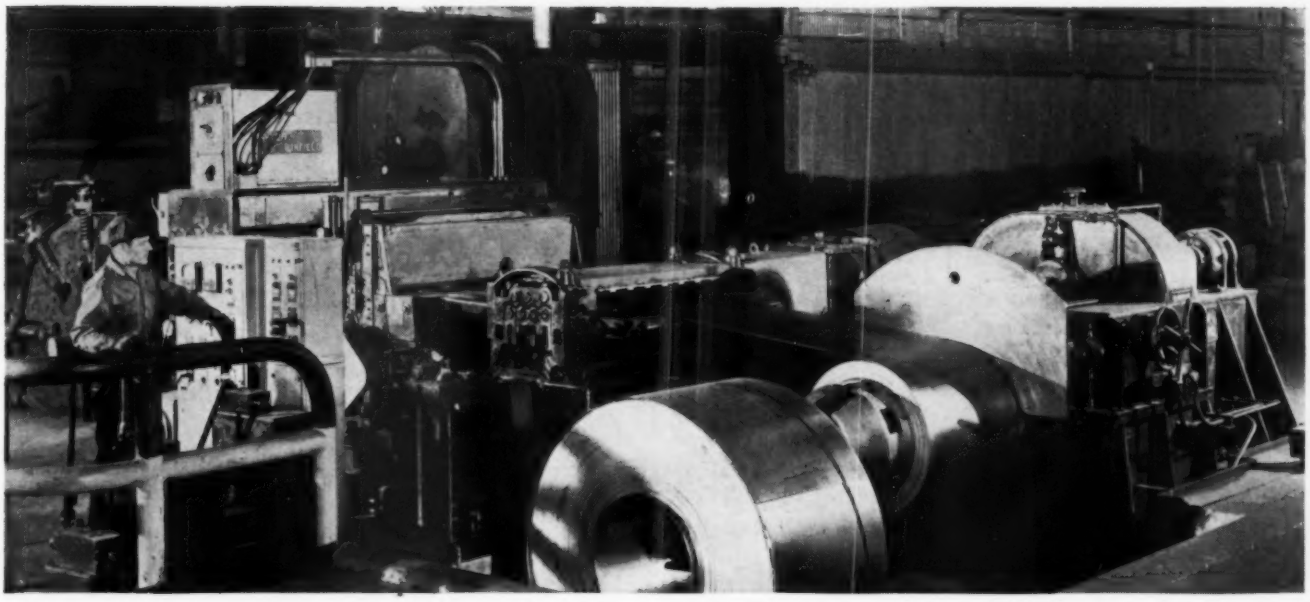
Good news for the home owners who use oil heat is contained in a statement issued by the American Petroleum Institute.

"Reserve supplies of distillate and residual fuel oils are in their strongest position in years as the current heating season approaches an end, the Institute reported.

"The petroleum industry's four billion dollar expansion program in 1947 and 1948 was credited as the chief factor in this further demonstration of its ability to take care of the needs of the country.

"Current storage supplies of distillate and residual fuel oils are higher, on the whole, than they were at the beginning of the four previous winters.

"Domestic Oil Burner authorities estimate that four million home owners use oil heat, and that an additional half million are expected to install this modern, labor-saving equipment in their households in 1949."



New Terne-Coating Line

A NEW CONTINUOUS TERNE-COATING LINE, which will produce a better quality sheet steel for the automotive and agricultural industries, is nearing full production at Gary (Indiana) Sheet and Tin Mill of Carnegie-Illinois Steel corporation, Charles A. Ferguson, general superintendent has announced.

Terne coating is the application of a thin layer of lead and tin to sheet steel to make the steel more corrosion resistant. The terne-coated steel from the new line is used for gasoline tanks, filters, oil cans and miscellaneous auto parts.

Replacing an old installation, the new terne line is out of the experimental stage and approaching its rated capacity. It is currently capable of coating coils up to 48 in. wide and weighing up to 48,000 lb in gauges from 16 to 26 with eventual capabilities of processing somewhat lighter gauges.

NWAH&ACA Yardstick Revised

ONE OF THE MOST POPULAR PUBLICATIONS of the National Warm Air Heating & Air Conditioning Association, the Yardstick for Classifying Warm Air, Winter Air Conditioning Systems, has been revised and published in a new edition. Designated Manual No. 8, this is the fourth edition of this booklet.

George Boeddener, secretary treasurer of the association says, "Manual No. 8, based on pre-war experience, is the greatest sales clincher tool ever published by the association. Before the war when competition was keen, hundreds of wide awake warm air heating contractors attached a copy of Manual No. 8 to each proposal they submitted. It is the type of booklet that is read from cover to cover by the prospects, owners, architects or general home building contractors."

Another announcement from Mr. Boeddener's office concerned the addition of four *Indoor Comfort* Conferences to the 1949 schedule. These conferences were scheduled as a result of demand from the east and mid-west for greater coverage. The locations and dates are:

Hartford, Connecticut—March 30-April 1

Toledo, Ohio—April 18-20

Milwaukee, Wisconsin—May 4-6

Charlotte, North Carolina—May 25-27.

The total number of *Indoor Comfort* Conferences now planned for the 1949 series is 13. Several more are being contemplated for the latter part of May and June.

Anthracite Convention

CURRENT PROGRESS IN ANTHRACITE and anthracite equipment and future industry and technical trends will be featured at this year's annual Anthracite Convention, at Lehigh University, Bethlehem, Pennsylvania, on May 5 and 6.

This Seventh Annual Anthracite Convention, sponsored jointly by Anthracite Institute and Lehigh University will present papers by leading engineers, educators, and members of the producing and retailing industry, emphasizing new research and new equipment developments, as well as progress in utilization and merchandising of anthracite.

Among the papers that are scheduled for the convention, one will discuss "Future Designs of Automatic Anthracite Equipment" and will be presented by J. H. Simpson, General Machine Co., Emmaus, Pennsylvania. "Planning Homes for Heating With Anthracite" is the title of a talk by R. A. Jones, professor of architecture, University of Illinois.

SMCNA Convention

PLANS HAVE BEEN VIRTUALLY COMPLETED for the 1949 annual convention of the Sheet Metal Contractors National Association, to be held at the Wardman Park Hotel, Washington, D. C., May 9 to 11. J. D. Wilder, executive secretary of the association, has announced that the convention should be regarded by the contractors as a combined convention and vacation. However, he also wished to call attention to the fact that the program will feature many outstanding speakers and the forums are going to discuss every problem that

can possibly be handled in the allotted time. The convention program follows:

TENTATIVE PROGRAM

Monday, May 9

9:00 a.m.—Lobby—Registration

11:00 a.m.—Continental Room—(Ladies are asked to be present)
- Convention called to order by President R. E. Walsh
- Invocation by Father Joseph Varden
- Announcements
- Presentation of Patrick Varden Memoriam to Mrs. Varden and family (Chairs on platform for Mrs. Varden, Mr. and Mrs. Tom Varden, Miss Gertrude Varden, Father Joseph Varden.) President Walsh will read text of Memoriam
- Ladies and the Varden family will then be excused and escorted from room
- Appointment of committees of the convention—
  - Resolutions
  - Auditing
  - Credentials and proxies
- President Walsh announces 5 men appointed to Nominating Committee
- Convention nominates and elects 5 additional men to Nominating Committee

12:30 p.m.—Adjournment

AFTERNOON

1:30 p.m.—Continental Room—Men Only (Non-member contractors invited.)
- Meeting called to order by President R. E. Walsh
- State of the Association
- Report of President R. E. Walsh
- Report of Treasurer C. M. Gundlach
- Report of Secretary J. D. Wilder

3:00 p.m.—Reports of Committees of past year's work
- Trade Relations—E. B. Brown, Jr., chairman
- Warm Air Heating—General—W. J. Keist, chairman
- Bookkeeping and Overhead—C. M. Warning, chairman
- Architectural Sheet Metal—W. J. Perkinson, chairman
- Fume Removal—Dust Collecting—N. J. Fisher, chairman
- Apprentice Training — Frank Kramer, chairman
- Presentation of Apprentice Award and Apprentice Committee Award
- Joint Board for Settlement of Jurisdictional Disputes, L. L. Narowetz
- Supplemental Report of Joint Board

5:30 p.m.—Burgundy Room — Get-Together Party (Men, Ladies, Guests)
- Refreshments—stroller music

Tuesday, May 10

9:00 a.m.—Continental Room—Announcements
- Report of Nominating Committee
- Labor Relations Forum opens
- General report of labor relations—Roy Dose, chairman
- Welfare Funds report—H. W. Wenning
- Report of Attorney R. E. Felhaber
- Labor Relations Forum Discussion

12:30 p.m.—Burgundy Room—Luncheon for men
- Address—"The Small Business Man's Problems," George Meredith

AFTERNOON

2:00 p.m.—Adams-Hamilton Room
- Warm Air Heating Forum—W. J. Keist, presiding
- Subject—"Proposed Heating Ordinance"—Dee Cramer, chairman
- —"Explosions and Comprehensive Liability Insurance," Wm. Stevens, chairman
- —Discussion of problems
- —Madison Room
- Architectural Sheet Metal Forum—W. J. Perkinson, presiding
- Subject—Series of booklets to replace Standard Practice in Sheet Metal Work
- —Discussion of this and other subjects
- —Franklin Room
- Ventilating Forum, E. B. Brown, W. A. Wiedenmann, P. W. Olmen, presiding
- Subject—"Proposed Fair Practice Code for Fume Removal, Dust Collecting"
- —Room to be announced
- Industrial Sheet Metal Forum, N. J. Fisher presiding
- Subject—"Proposed Code for Fume Removal, Dust Collecting"

7:00 p.m.—Continental Room—Banquet
- Dinner, music, floor show, dancing

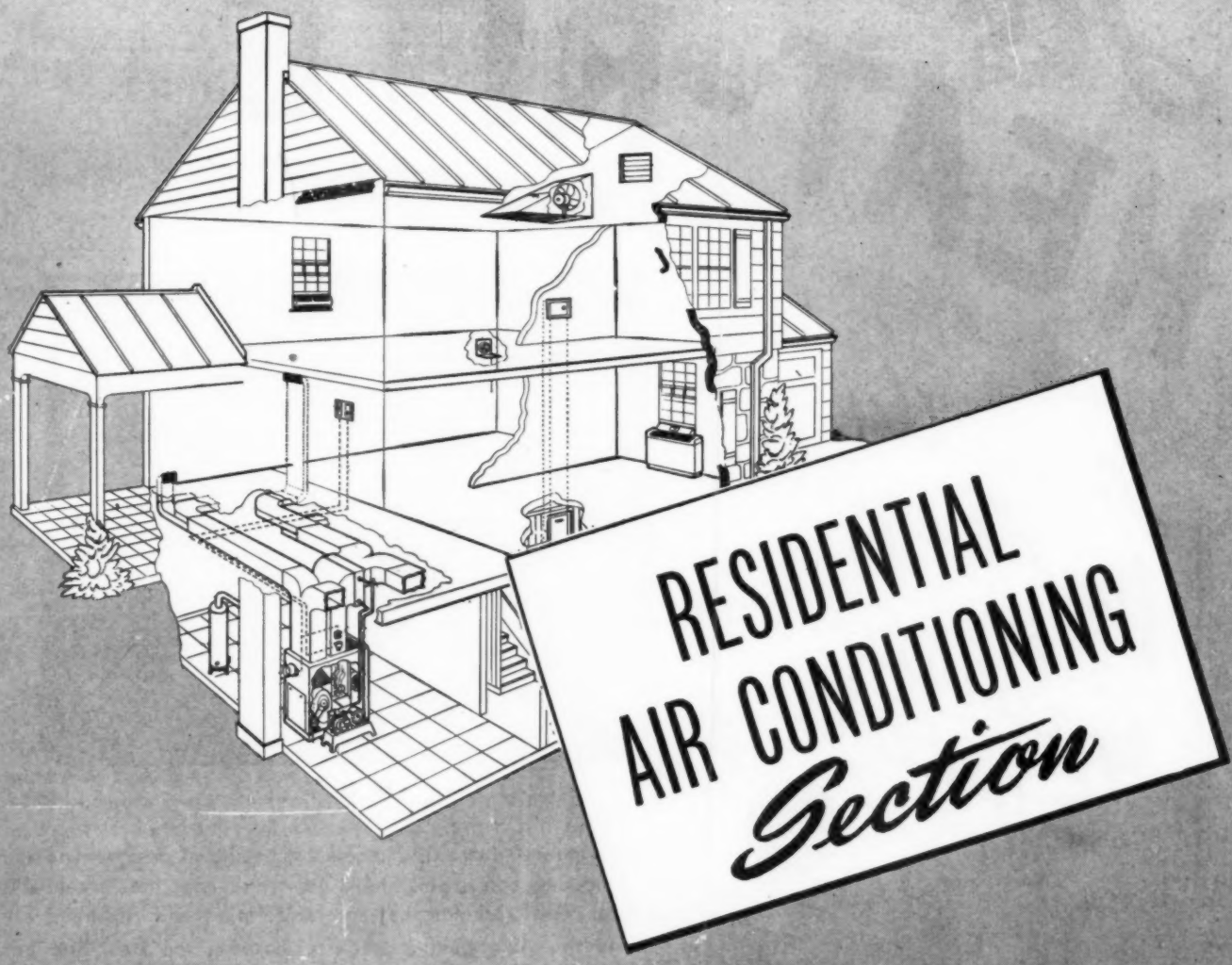
Wednesday, May 11

9:30 a.m.—Burgundy Room—General session
- Reports of Forum chairmen and recommendations for next year's work
- New Business
- Discussion of topics of general interest
- Vote on amendment to By-laws (Changing fiscal year)
- Election of Officers and Directors
- Appointment of Committee Chairmen by incoming President

12:30 p.m.—Continental Room
- Luncheon for men and ladies
- Address: "This America"
- Presentation of outgoing officers and directors by President Walsh
- Presentation of outgoing committee chairmen by President Walsh
- President Walsh introduces new President
- New President introduces new officers and directors
- New President introduces new committee chairmen or holdovers.

CONVENTION CLOSES WITH LUNCHEON

3:00 p.m.—Madison Suite
- Meeting of new Board of Directors



RESIDENTIAL AIR CONDITIONING *Section*

INDOOR COMFORT — IN ALL SEASONS
FOR HOMES AND SMALL BUSINESSES

Auer HEAT-RITE

A really fine Register for Gravity Systems

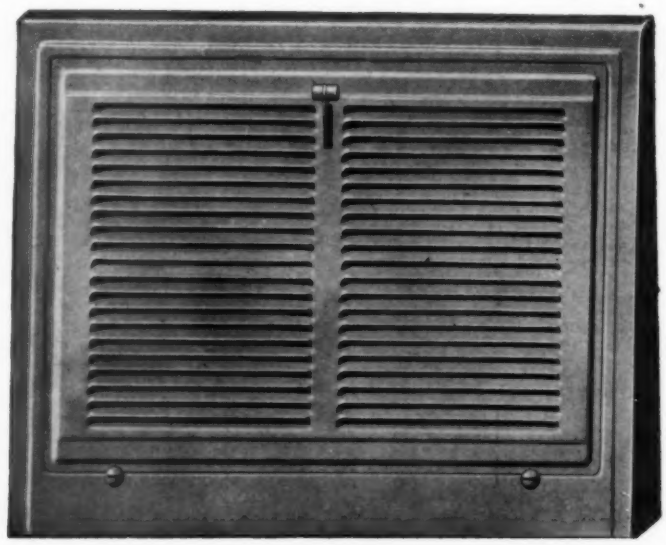


Fig. H-800

At every point—durability, efficiency, beauty of design—you will look a long time before you find a gravity register that excels this Heat-Rite. Fine workmanship, careful forming and finishing, are evident in this Auer quality product. Because the Heat-Rite has closely spaced fins, and no attempt at unnecessary embellishment, it has the same streamlined appearance as latest air conditioning models. Sturdily constructed, it makes an easy, tight, neat installation on any warm air job. It has plenty of open area, removable face, and fins adjustable for desired up or down direction. Auer's unique spring tension valve adjustment can be depended on to hold the valve positively in position. Heat-Rite is supplied in wall or baseboard registers, also intakes.

An unusual value today, Heat-Rite has always been a leader in popularity in the Auer line.

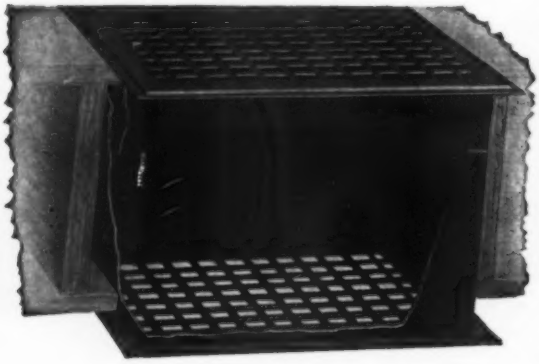


Fig. X

ADJUSTABLE CEILING VENTILATOR.
Permits heat to pass from a lower to an upper room.

Ask for Auer Register Book, showing all models for air conditioning and warm air. Special Grille Catalog also sent on request.

The Auer Register Company, 3608 Payne Avenue, Cleveland 14, Ohio

Auer REGISTERS & GRILLES for AIR CONDITIONING & GRAVITY

Temperature Distribution In a Test House With Various Heating Devices (Part III)

RICHARD S. DILL *and* PAUL R. ACHENBACH
Washington, D. C.

Last in a series of articles describing tests conducted on various means of heating a small, low cost house and the results obtained.

THE oil burning gravity floor furnace was installed in the floor of the hall. The warm air discharge and the cold air return were incorporated in a single register measuring 22 by 30 in. A pot-type vaporizing burner with automatic electric ignition was used in the furnace. The operation was automatically controlled by the room thermostat during the tests. The input rating of the furnace was 70,000 Btuh.

The results obtained on this heating device are summarized in table 12. (Next page)

Gravity Hot Water Heating System

The gravity hot water heating system was of the conventional type and was designed in cooperation with the Heating, Piping, and Air Conditioning Contractors National Association. The boiler was a rectangular, cast iron boiler of three sections, with a wet base. It was fired with a gun type oil burner. The burner was controlled by a room thermostat and an immersion aquastat connected in series. Small-tube radiators were used to warm the rooms.

Fig. 9 shows a view of the oil fired boiler and a companion coal fired boiler of the same model that was installed for making comparisons in performance. No data on the coal-fired boiler are presented in this report.

The results obtained on this heating device are summarized in table 13. (Next page)

Test Procedure

Each heating system was operated for several days to assure temperature distribution characteristic of the heater. The automatic devices were controlled by a room thermostat placed 30 in. above the floor on an inside wall of the living room. The setting of the thermostat remained at 70 F continuously during these tests. The manually controlled units were adjusted to maintain approximately 70 F at the 30 in. level. Each heater, when installed, was adjusted in accordance with the manufacturer's instructions.

Continuous records of the outdoor weather condi-

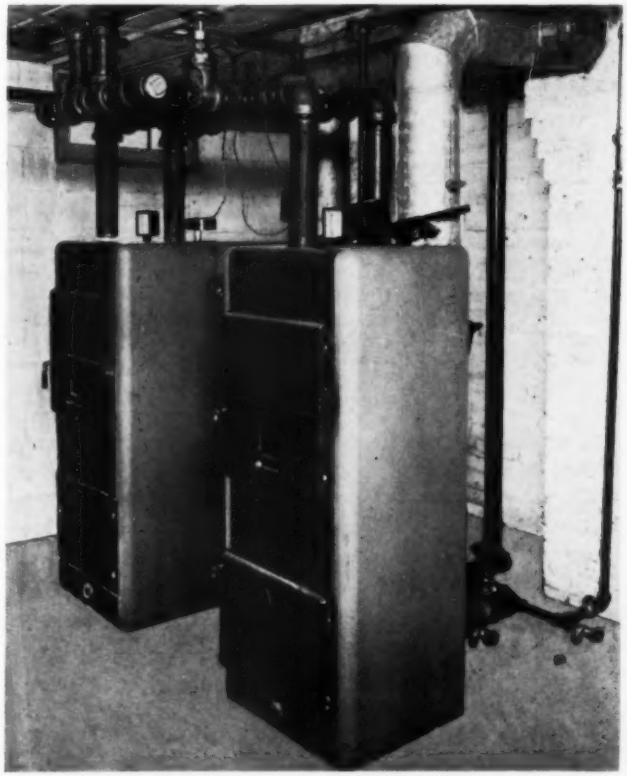


Fig. 9. — Oil fired boiler and a companion coal fired boiler of the same model

*—*Building Materials & Structures Report BMS 108, National Bureau of Standards*

TABLE 12.—*Temperature distribution using an oil fired floor furnace (gravity circulation)*

Height above Floor	Kitchen	Living room	North bedroom	South bedroom	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 31 F)							
in.	°F	°F	°F	°F	°F	°F	°F
2	60	60	62	63	60	61	3
30	69	69	69	69	68	69	1
60	77	77	78	78	78	78	1
78	82	80	82	80	84	82	4
94	84	82	83	81	85	83	4
Basement	....	....	....	....	....	50	....
Attic	....	....	....	....	....	59	....
Temperature Difference							
2 to 60	17	17	16	15	18	17	....
2 to 94	24	22	21	18	25	22	....
Room Temperature (Outside Temperature 36 F)							
2	62	62	63	63	61	62	2
30	69	69	70	69	68	69	2
60	76	75	77	77	77	76	2
78	80	78	81	79	84	80	6
94	83	80	82	81	85	82	5
Basement	....	....	....	....	....	51	....
Attic	....	....	....	....	....	55	....
Temperature Difference							
2 to 60	14	13	14	14	16	14	....
2 to 94	21	18	19	18	24	20	....

TABLE 13.—*Temperature distribution in a test bungalow heated by oil fired hot-water boiler located in basement with heat distributed by gravity circulation through cast iron radiators*

Height above Floor	Kitchen	Living room	North bedroom	South bedroom	Bath	Average	Maximum temp difference between rooms
Room Temperature (Outside Temperature 19 F)							
in.	°F	°F	°F	°F	°F	°F	°F
2	66	66	66	66	64	66	2
30	70	69	69	69	68	69	2
60	76	75	74	74	73	74	3
78	79	77	76	75	76	77	4
94	81	79	77	77	76	78	5
Basement	....	....	....	....	....	75	....
Attic	....	....	....	....	....	39	....
Temperature Difference							
2 to 60	10	9	8	8	9	8	....
2 to 94	15	13	11	11	12	12	....
Room Temperature (Outside Temperature 32 F)							
2	67	68	67	67	66	67	2
30	70	70	69	69	68	69	2
60	74	73	72	72	71	72	3
78	76	75	73	72	73	74	4
94	78	76	74	74	73	75	5
Basement	....	....	....	....	....	75	....
Attic	....	....	....	....	....	50	....
Temperature Difference							
2 to 60	7	5	5	5	5	5	....
2 to 94	11	8	7	7	7	8	....

tions and of the temperature at the 30 in. level in the center of each room were obtained with the recording instruments described above. The temperatures indicated by the thermocouples in each room, by those on the floor and wall surfaces, and by those in the basement and attic were observed at intervals throughout the day.

Vertical Temperature Differences

The average temperatures obtained at five levels in the rooms with the various devices tested are presented in tables 1 to 13. The temperatures shown are those obtained for a typical observation at the given outdoor temperature rather than an average of all the observations taken at the same outdoor temperature. The average difference in temperature between the 2 in. level and the 60 in. level above the floor and that between the 2 in. level and the 94 in. level are tabulated for each room and also for the entire house for each device. The 94 in. level was 2 in. below the ceiling.

The data presented for each device are (a), those that were obtained during the coldest weather that occurred while the device was under test, and (b), those that were obtained when the outdoor temperature was as near to 32 F as occurred during the test period.

From the standpoint of comfort, the temperatures from the floor to 5 feet above the floor are more significant than the temperatures at higher levels. However, an appreciable amount of heat will be radiated from the ceiling when it reaches a high temperature; this radiation may be of importance in maintaining warm floors, depending upon the conditions. High temperatures in the upper parts of the rooms will affect the heat loss from the building materially, especially if the ceiling is not insulated from the attic.

Tables 4, 11, and 13, show that the average temperature differences produced in the test bungalow between the 2 in. level and the 60 in. level with continuous forced circulation of air through a plenum chamber, with a forced circulation gas floor furnace, and with a gravity hot water heating system, respectively, were less than 10 deg F for outside temperatures in the range from 32 to 38 F. The temperature differences produced in this same zone by all the other devices tested ranged from 14 to 18 deg F between the level 2 in. above the floor and 60 in. above the floor at comparable outside temperatures. These devices included: gravity circulation of air through a plenum, intermittent forced circulation of air through a plenum with either the electric heater or the oil furnace, gravity floor furnaces, and a gas space heater with a fan.

The same heating devices or heating systems that produced the lower temperature differences from the 2 in. to the 60 in. levels, also produced lower temperature differences from the 2 in. level to the 94 in. level. Except for the case of the electric heater when used with a continuous circulation of 1,460 cfm of air (reported in table 4), the heating devices operating with the plenum chamber at the ceiling in the hall produced higher temperature differences between the floor and the ceiling than the other devices tested. This condition was to be expected since the method of introducing the warm air did not diffuse heat throughout the lower parts of the room.

A comparison of tables 7 and 8 shows that, at an outside temperature of 48 F, the use of a fan to force air downward through a space heater and then across the living room near the floor caused the zone below the 60 in. level in that room to be warmer than it was with gravity circulation and that the fan caused the air 2 in. above the floor in the other rooms to average 4.5 deg F lower than was the case when gravity circulation was used. The air in the lower 60 in. of the living room was warm enough for comfort with gravity circulation of air through the space heater jacket.

What the Graph Means

The vertical temperature differences between levels increased as the outside temperature decreased with all the heating devices tested. The variation in the vertical temperature differences with outside temperature for five heating systems is shown in Fig. 10. Data were obtained for a sufficient range of outside temperatures to show the trend. It will be noted that the gravity hot water heating system yielded the smallest temperature differences between levels throughout the range of outside temperatures shown. The heat released in the basement by the boiler, piping, and smokepipe was probably influential in keeping the temperature differences small. Table 13 shows that when the gravity hot water system was used, the temperature in the basement under the floor joists was 75 F when the outside temperature was 19 F. The heat transfer through the wood floor was in an upward direction for this system.

Two other interesting results are shown in Fig. 10. The vertical temperature difference was less between the 2 in. level and the 60 in. level for outside temperatures of 35 F, or lower with the electric heater having gravity circulation of air through a plenum, than with either the electric heater or the oil burning furnace having forced circulation through the same plenum.

Vertical temperature differences between the 2 in. and 60 in. levels for the gas space heater with a fan were substantially equal to those observed for the oil burning furnace with the plenum distribution system.

Horizontal Temperature Differences

The maximum temperature difference occurring between any two rooms at each of the five levels is also evaluated for each device in tables 1 to 13. The temperature recorded at each level for each room is the average of all the temperatures observed at that level in each room.

The horizontal temperature difference has no direct relationship to the vertical temperature difference. The comparison indicates, rather, the effect of the heater location for gravity circulation devices and, to some extent the effect of register or damper adjustments for forced circulation devices.

The results show that the average of the horizontal temperature differences at all levels of measurement ranged from 2 to 4 deg F for the several floor furnaces and for the gravity hot water system. The horizontal temperature differences obtained with the electric heater and the oil burning furnace, when attached to the plenum chamber, were nearly as small for the levels 2, 30, and 60 in. above the floor as for the above-

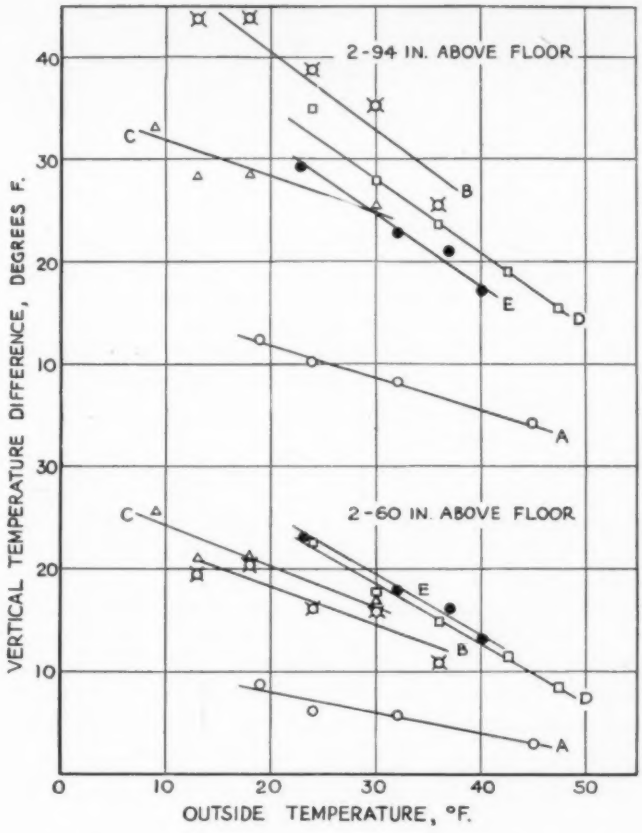


Fig. 10—Vertical temperature differences attained with various heating devices in the test bungalow at the National Bureau of Standards

A, Gravity hot water heating system with radiators; B, electric heater with gravity circulation through a plenum chamber; C, electric heater with forced circulation (780 cfm) through a plenum chamber; D, oil furnace with forced circulation through a plenum chamber; E, gas space heater with a fan.

mentioned devices, but they were substantially greater in the upper levels in the house.

Room TD Greatest With Space Heater

As would be expected, the temperature difference between rooms was greater for the space heaters located in the living room than for the other heaters tested. This effect can probably be attributed to the fact that the rooms other than the one containing the heater are warmed by the overflow of heat from the living room through the doorways. If there were no temperature differences between rooms, there would be no motivating force for air circulation. In some instances, the temperature differences between rooms can be decreased by the use of a fan on or near the space heater. However, a comparison of tables 7 and 8 shows that the fan increased the horizontal temperature difference between rooms at the 2, 30, and 60 in. levels for the oil burning heater.

The results in tables 1 to 13 show that, except for the space heaters, the average horizontal temperature differences from 2 to 60 in. above the floor did not increase with lower outside temperatures. When the bungalow was heated with a space heater located in the living room, the temperature difference between

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API-AGA Fuel Reserve Report

THE Committee on Petroleum Reserves of the American Petroleum Institute herewith submits its annual report on proved liquid hydrocarbon reserves of the United States as of December 31, 1948. As will be recalled, beginning with our report for December 31, 1946, the estimates presented on proved liquid hydrocarbon reserves were expanded to include not only crude oil, but also all classes of natural gas liquids. The figures on crude oil were prepared by the API committee, and the figures on natural gas liquids were prepared by the AGA committee in cooperation with the API committee. For the present report, the same procedure has been followed.

As of December 31, 1948, the committee estimates that the proved reserves of crude oil in the United States amounted to 23,280,444,000 barrels. The natural gas liquids totaled 3,540,783,000 barrels, making a grand total of liquid hydrocarbons of 26,821,227,000 barrels. This is shown in the following tabulations.

Crude Oil—American Petroleum Institute

(Barrels of 42 U. S. Gallons)

Total proved reserves of crude oil as of December 31, 1947		21,487,685,000
Revisions of previous estimates	+ 1,958,853,000	
Extensions of old pools	1,439,873,000	
New reserves (new pools) discovered in 1948	396,481,000	
Proved reserves added in 1948		3,795,207,000
Total proved reserves as of December 31, 1947 plus new proved reserves added in 1948		25,282,892,000
Less production during 1948		2,002,448,000
Total proved reserves of crude oil as of December 31, 1948		23,280,444,000
Increase in crude-oil reserves during 1948		1,792,759,000

Natural Gas Liquids—American Gas Association and American Petroleum Institute

(Barrels of 42 U. S. Gallons)

Total proved reserves of natural gas liquids as of December 31, 1947		3,253,975,000
Revisions of previous estimates and extensions of old pools	+ 405,874,000	
New reserves (new pools) discovered in 1948	64,683,000	
Proved reserves added in 1948		470,557,000
Total proved reserves as of December 31, 1947 plus new proved reserves added in 1948		3,724,532,000
Less production during 1948		183,749,000
Total proved reserves of natural gas liquids as of December 31, 1948		3,540,783,000
Increase in natural gas liquids reserves during 1948		286,808,000

Total Liquid Hydrocarbons—A.P.I. & A.G.A.

(Barrels of 42 U. S. Gallons)

Total proved reserves as of December 31, 1947		24,741,660,000
Revisions of previous estimates and extensions of old pools	+ 3,804,600,000	
New reserves (new pools) discovered in 1948	461,164,000	
Proved reserves added in 1948		4,265,764,000
Total proved reserves as of December 31, 1947 plus new proved reserves added in 1948		29,007,424,000
Less production during 1948		2,186,197,000
Total proved reserves of liquid hydrocarbons as of December 31, 1948		26,821,227,000
Increase in total liquid hydrocarbon reserves during 1948		2,079,567,000

The estimates in this report, as in all previous annual reports of this committee, refer solely to proved or blocked-out reserves. They include only oil and natural gas liquids recoverable under existing economic and operating conditions.

The estimates made for this report by the committee do not include:

1. Oil* under the unproved portions of partly developed fields.
2. Oil in untested prospects.
3. Oil that may be present in unknown prospects in regions believed to be generally favorable.
4. Oil that may become available by secondary-recovery methods from fields where such methods have not yet been applied.
5. Oil that may become available through chemical processing of natural gas.
6. Oil that can be made from oil shale, coal, or other substitute sources.

Proved reserves are both drilled and undrilled. The *proved drilled* reserves, in any pool, include the oil estimated to be recoverable by the production systems now in operation, whether primary or secondary, and from the area actually drilled up on the spacing pattern in vogue in that pool. The *proved undrilled* reserves, in any pool, include reserves under undrilled spacing units which are so close, and so related, to the

* *The word "oil" unless defined as crude oil, is used in this report as essentially equivalent to liquid hydrocarbons.*

drilled units that there is every reasonable probability that they will produce when drilled.

In the case of new discoveries, both of new fields and of new pools (pays, reservoirs) in old fields, which are seldom fully developed in the first year and in fact for several years thereafter, the estimates of proved reserves necessarily represent but a part of the reserves which may ultimately be assigned to the new reservoirs discovered each year. For a one-well field, where development has not yet gone beyond the discovery well, the area assigned as proved is usually small in regions of complex geological conditions but may be larger where the geology is relatively simple. In a sparsely drilled pool the area between wells is considered to be proved only if the geological and engineering data assure that such area will produce when drilled. The total of new oil through discoveries estimated as proved in any given year is generally comparatively small, because development is usually not extensive during the first year. The total of new oil through extensions, on the other hand, is comparatively large. As knowledge of the factors affecting production and reservoir performance becomes available, and as these factors are studied, reserves in older fields can be estimated with greater precision and revised accordingly. Therefore, the total quantity of the new proved reserves for the year includes the oil from discoveries, extensions and revisions of previous estimates.

The committee again wishes especially to stress the fact that its estimates of proved reserves cannot be used as a measure of the rate at which these reserves can be produced, with or without physical waste. Oil cannot be produced from the permeable rocks in which it occurs at any desired rate, because the flow of oil through the pores of the oil-bearing rocks is definitely controlled by the physical factors of the reservoir. As a matter of fact, today's known oil can be recovered only over a period of many years and at gradually declining annual rates. This has been widely demonstrated by past performance under all kinds of operating conditions. Therefore, only incorrect conclusions as to the life of these reserves can be obtained by dividing these reserves by the current rate of production.

AGA Committee Report

The Committee on Natural Gas Reserves of the American Gas Association herewith submits its fourth annual report, summarizing the proved recoverable reserves of natural gas and natural gas liquids of the United States, as of December 31, 1948, as follows:

Natural Gas Reserves

(Thousands of Cubic Feet)

Total proved reserves as of December 31, 1947		165,926,914,000
Extensions and revisions of previous estimate	9,769,483,000	
New reserves discovered in 1948	4,129,089,000	
Net changes in "stored gas" during 1948	51,482,000	
Total proved reserves added and net changes in "stored gas" during 1948		13,950,054,000
Total proved reserves as of December 31, 1947 and additions during 1948		179,876,968,000
Deduct production during 1948		6,007,628,000
Total proved reserves of natural gas as of December 31, 1948		173,869,340,000

Natural Gas Liquids Reserves

(Barrels of 42 U. S. Gallons)

Total proved reserves as of December 31, 1947		3,253,975,000
Extensions and revisions of previous estimate	405,874,000	
New reserves discovered in 1948	64,683,000	
Total proved reserves added in 1948		470,557,000
Total proved reserves as of December 31, 1947 and new proved reserves added in 1948		3,724,532,000
Deduct production during 1948		183,749,000
Total proved reserves of natural gas liquids as of December 31, 1948		3,540,783,000

The committee has included in this report for the first time, a study of the natural gas *located* in underground storage reservoirs. The "stored gas" is considered to be the gas which has been transferred from its original location in a gas and/or oil field to another natural underground reservoir for the primary purposes of conservation, fuller utilization of pipe line capacities and more effective delivery to markets. The "stored gas" reserve is the quantity which has been placed in a natural reservoir and not yet removed. Any additional recoverable gas which may have been in the underground storage reservoirs when injection was begun, and has not yet been produced, is classified in its proper category and listed as in the committee's earlier reports. The distinction is now made between production of gas from its original reservoir and net change in underground storage.

Gas Liquids Defined

In its report of December 31, 1946, this committee defined natural gas liquids as: ". . . . those hydrocarbon liquids that are gaseous in the reservoir but are obtainable by condensation or absorption. Natural gasoline, condensate, and liquefied petroleum gases fall in this category." In order to prevent misunderstanding of this term it is further amplified as follows: the natural gas liquids are those heavier hydrocarbon components of the natural gas which are removed and reduced to the liquid state by various processes. These processes usually take place in the field separator, scrubber, gasoline plant, or cycling plant. The liquids so collected and the products made from them in some of the modern plants are known by a variety of names, but they have been grouped together here under the general heading, "natural gas liquids."

The committee emphasizes again that it is not possible to estimate the total reserves of a field in the year of discovery. Satisfactory estimates can be made

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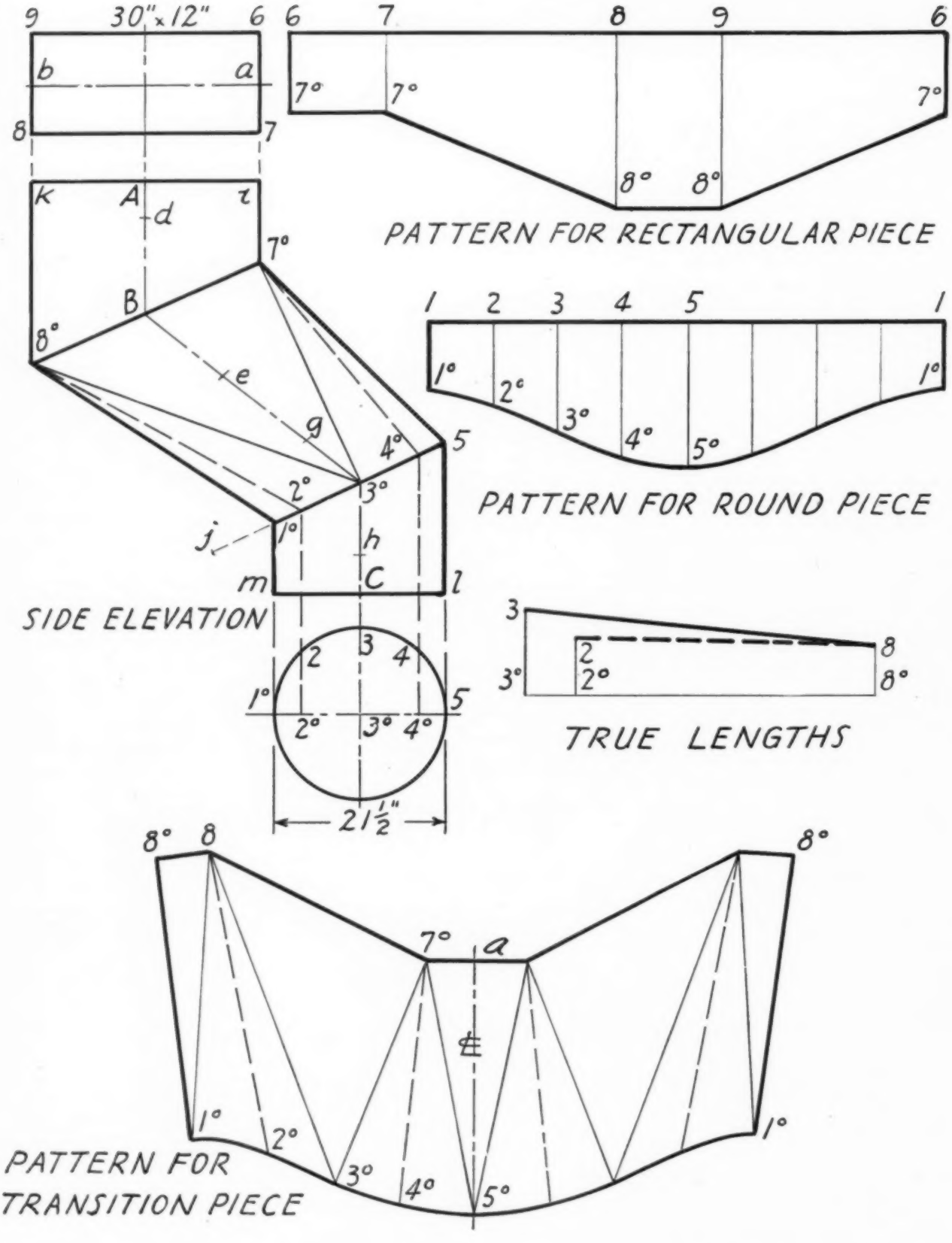

Three Piece Transition Offset — *Wm. Neubecker*

Pattern Development for

Heavy Gauge Blow Pipe Fittings

WILLIAM NEUBECKER
Brooklyn, New York

Three Piece Transition Offset

In this development of a three piece offset, the size of the rectangular duct is 12 x 30 in.; area, 360 sq in. The area of a round duct of similar area may be obtained without resorting to mathematics by referring to a table of circumferences and areas and selecting the nearest area which will be 363 sq in., the area of a 21½ in. diameter circle. Draw lines as *k-i* and *m-l* in the side elevation, representing the 30 in. width of the rectangular duct and the 21½ in. diameter of the round duct respectively, at the required distance and amount of offset. Draw the perpendicular center lines as shown at *A* and *C*, indefinitely. Connect points *B* and *3°*, selected to form the desired angle of the transition piece. *A-B-3°-C* then represents the center line of the transition offset.

To obtain the miter line where the rectangular piece intersects with the transition, proceed as follows: Bisect the angle *A-B-3°* using *B* as a center and drawing short arcs to intersect the line *A-B* at *d* and line *B-3°* at *e*. With the same or greater radius and using *d* and *e* as centers, strike arcs intersecting at *c*. Draw a line from *c* through *B* indefinitely. In a similar manner, bisect the angle *B-3°-C* and establish the miter line where the round piece intersects with the transition by drawing a line from *j* through *3°* indefinitely.

Above *i-k* draw the section of the rectangular end, making the sides 12 in. From *i* and *k* draw perpendicular lines to intersect the miter line at *7°* and *8°*. In a similar manner, draw the section of the round duct below *l-m* and divide its circumference equally as shown, using more divisions in practical work. From division points *1°*, *2*, *3*, *4*, and *5°* erect perpendicular lines to intersect the miter *1°-5°* as shown. Connect the points of intersection on the lower miter line with the upper miter line by drawing solid lines from *1°* to *8°*, *3°* to *8°*, *3°* to *7°*, and *5°* to *7°* and dotted lines from *2°* to *8°* and *4°* to *7°*. This completes the side elevation, the rectangular section, and the circular section.

Finding the True Lengths

To find the true length of the solid line *3°-8°* in side elevation place this distance on the horizontal line in the true lengths as shown by *3°-8°*. At right angles to this line, erect the lines *3°-3* and *8°-8* equal respectively to the height *3°-3* in the circular section and *8-b* in the rectangle section. Draw a line from *3* to *8* as in the diagram. In a similar manner, the true length of the dotted line *2°-8°* in side elevation is found by placing this distance as shown by the line *2°-8°* in the true lengths. At right angles, erect the lines *8°-8* and *2°-2* equal respectively to *8-b* and *2°-2*. Draw a line from *2* to *8* as in the diagram of dotted true lengths. Proceed in this manner for obtaining the balance of the true lengths of solid and dotted lines. Before the pattern for the center transition can be developed, it will be necessary to obtain the miter patterns for both the round and rectangular pieces shown at the bottom and top in the side elevation.

Developing Pattern for Round Piece

To obtain the pattern for the round piece, take its girth and place it on the horizontal line shown as *1-5-1*. Divide the girth into equal parts as in the circular section and at right angles to the division points *1*, *2*, *3*, etc., draw lines indefinitely. Now measuring from the line *l-m* in the side elevation take the various distances to *1°*, *2°*, *3°*, *4°*, and *5°* on the miter line, and place them on similarly numbered lines in the pattern for the round piece. Trace a line through points of intersections so obtained, then *1-5-1-1°-5°-1°* is the pattern required.

Developing Pattern for Rectangular Piece

Take the girth *6-7-8-9-6* in the rectangular section and place it on the horizontal line *6-6*. From divisions established and at right angles to *6-6* draw lines indefinitely. Now measuring from the line *i-k* in the side elevation take the distance from *i* to *7°* and place it on the lines drawn from points *6* and *7* in the pattern as shown by *6-7°* and *7-7°*. Again measuring from the line *i-k* in the side elevation, take the distance from *k* to *8°* and place it on the pattern as shown by *8-8°* and *9-8°*. Connect these intersections with lines to complete the pattern for the rectangular piece.

Developing Pattern for Transition Piece

The pattern for the transition is laid out as follows: Take the length of *8°-1°* in the side elevation and place it as shown in the development. At right angles to this line, draw the line *8°-8* equal to *b-8* of the rectangular section in side elevation and draw a line from *8* to *1°*.

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Storage Space Costs You Money!

ERNEST W. FAIR
Bristow, Oklahoma

One of the most neglected departments of any business is that devoted to storage of material. Yet the space occupied by the stored material costs money and should be used as efficiently as possible. The author gives 25 worthwhile suggestions.

MOST of us keep a weather eye open at all times to eliminate every possible source of loss in the operation of a business. The average contractor in this industry who has survived a number of years of business experience has become very adept at keeping loss factors out of his operation.

Yet, in our over-all zeal we often overlook some of the most obvious spots in which to boost profits by eliminating losses, which after all, must come out of our net profits.

One such place, a number of veteran sheet metal contractors tell us, is in storage. Losses in this department are particularly high in small operations where storage is looked upon as just another inconvenience.

Storage Short Cuts

Here are 25 short cuts being used today by sheet metal contractors, both large and small, who have given a great deal of attention to this factor in their business operation and have profited thereby.

1. Use storage space that provides maximum efficiency. Far too many firms select the most useless corner as a storage area. A spot well-selected to provide maximum efficiency in operation of the business is most important.

2. Make certain everything is accessible. Every item in storage should be so stocked that it can be reached immediately; delays cost money, help create other costly factors such as breakage, damage, etc.

3. Every storage set-up should be flexible. It is most difficult, in these times, to anticipate any long range storage needs. Therefore, any storage plan which is completely flexible is always a better one than a stop-gap space or system.

4. Store material so that counting is easy. Inventory control costs jump sky-high when storage has been so haphazard as to make the job a long and tedious procedure. Counting is also necessary at many other times than during inventory periods; in planning new orders, controlling stock for immediate business plans, etc.

5. Keep piles regular and uniform. Too many people look on the storage room as a catch-all corner and dump goods into it without plan or any attempt at neatness. Everything should be piled in regular and uniform stacks whenever possible. This prevents damage in storage, facilitates counting, reduces loss factors and lends itself to easier good housekeeping practices.

6. Handling costs should be kept at the very minimum. Items in storage, which must be moved about constantly before being put to use, are expensive to store. When an item can be set into its niche on arrival and left there until use, its storage costs have been kept very low.

7. Reduce exposure to weather or the elements as much as possible. Weather damage is possible even to material stored inside in some cases through improper ventilation, a window left open during a rainstorm, or overexposure to heat. Planning of stock-piling in the storage room helps to eliminate losses therefrom.

8. Provide dividing spaces between items. Dumping different types of goods side by side makes removal of any one item a difficult job . . . if dividing space is provided between all such groups handling is made easier, control more accurate and damage in storage reduced materially.

9. Place units so that labels are visible. One of the most positive signs of unsatisfactory storage procedure is to find a storeroom loaded with boxes and containers whose labels are hidden or which are not even labeled. This point should be checked each time a new container is placed in the storeroom.

10. Keep the order of stacking and removing uniform, for smooth and neat operation of the storage procedure. Helter-skelter stacking is never efficient; most often it is a sure way to damage goods in storage. Neatness and uniformity eliminate damage losses, accelerate control and facilitate removal when the latter must be done speedily.

11. Keep old stock to the front; use it up first. The practice of drawing from a section and then stacking new arrivals in front of the remainder of old stock is seldom good procedure, for very obvious reasons. This is advisable even when the arrival of new stock requires complete re-arrangement of the old.

12. Standardize all equipment used in the storage room, such as shelving, bins, etc.; this facilitates rearrangement for changing conditions and arrival of entirely new items and also lends itself to easier maintenance and upkeep of such equipment.

13. Plan storage for compactness and ease of handling of stored goods. Compactness utilizes available space to the maximum extent and also helps to keep down hazards brought about through accumulation of waste and debris around poorly piled goods.

14. Make certain any storage bins, shelves, etc., used lend themselves to easy expansion, have proper strength and high salvage value. The purchase of any such equipment should not be made until a complete study of future expansion of the business has been taken into consideration and one is assured that such equipment can handle the additional storage problems involved.

15. Take maximum precautions for safety in storage. This applies not only to storage in such a manner as to prevent collapse of piles but also to eliminating any possible physical injury to employees engaged in handling stored goods.

16. Fire is one of the most prevalent causes of loss in storage. Every fire insurance company has information on proper storage for its policyholders and many companies have individual practices which must be followed if insurance coverage is to be obtained. Have the local agent check storage procedures and facilities regularly.

17. Guard against vermin of all kinds in the storeroom. Good housekeeping is the best practice to follow. Sealing all cracks in walls, floor and ceiling and elimination of damp conditions in the storeroom helps. Once the presence of vermin has been ascertained it must be exterminated immediately; delay is always very costly and expensive.

18. Cleanliness is a must in all storage. Not only is it needed to preserve the condition of stored goods but it is helpful in eliminating fire hazards, reducing accidents and in pest and vermin control. The same standards of cleanliness applied to other sections of the business should also be applied to the storeroom.

19. Keep goods off floors, away from walls and free of ceilings, if it is at all possible to do so. Runners for floor storage are inexpensive and easily made. Their cost is insignificant when compared to the savings through elimination of damaged goods and increased ease of handling that they make possible.

20. Keep aisles wide enough to accommodate handling of stored goods. Attempting to secure more storage space by squeezing aisles between stacks is generally bad procedure. Most often a neglected point is failure to make certain that there is plenty of room around corners for easy handling in the store room. Most accidents occur at this point; so also do greatest losses from collapsed piles.

21. Provide an area for unpacking, inspection and temporary storage within the storeroom itself. This helps in the reduction of waste, cleaning up problems in other parts of the building, and greatly facilitates checking of goods before being removed from storage.

22. Provide fire-fighter apparatus for every part and section of the storeroom. If a sprinkler system is not feasible, then fire extinguishers should be in sufficient quantity and so-placed that one is always readily available from any part of the storeroom. Heavy losses can be sustained during the brief interval it will take a man to get from a far corner to the front area where fire extinguishers are all too frequently placed.

23. Oily rags and other substances subject to spontaneous combustion must never be allowed to accumulate in any corner. Closed metal containers should be available for all such combustible material and these containers should be placed away from walls and stored piles of goods.

24. Goods subject to rust and corrosion should be stored in a dry place and in most cases should be covered with oil or heavy grease.

25. Goods easily damaged should always be stored in containers; preferably the containers in which they were shipped from jobber or manufacturer.

Steel Allocations Adjusted

Secretary of Commerce Sawyer asked the Office of Industry Cooperation to review the voluntary allocations programs and to readjust them wherever such action seemed to be necessary.

This review was made and the result was the release of approximately 139,000 tons of steel per month. Subsequent adjustments have increased this release to approximately 150,000 tons, although since February additional programs have been added. Monthly studies are being made. The next one will occur in April and will establish set-asides for delivery in the month of July.

The total comparative figures for February and June are as follows:

STATED MONTHLY STEEL REQUIREMENTS
for
VARIOUS VOLUNTARY PROGRAMS
For the Months of

Program	*February*	*June*
Anthracite Mining	2,570	2,000
Armed Forces	102,505	64,371
Atomic Energy	22,265	10,340
Barges	20,000	11,202
Federal Aero. Agencies	1,926	614
Freight Cars	247,876	174,953
Mang. Ore Cars	2,192	2,192
Merchant Vessels	10,195	11,729
Mining Machinery	26,400	31,785
Oak Ridge Pipe Line	4,750	4,750
Steel Houses	9,835	—
Tank & Oil Field Prod. Equip.	16,530	16,530
Tankers	40,380	31,551
Warm Air Heating Equip.	31,622	26,400
Sub Totals	539,046	388,417

New Programs Accepted by Steel Industry as of February 1949, allocations to become effective in April and May

Baseboard Radiation	950
E. C. A.	33,394
Grain Bins	8,400
Reclamation Projects	13,641
Sub Totals	56,385
Grand Totals	444,802

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rooms usually increased somewhat with decreasing outside temperature.

Discussion

It was noted that the vertical temperature difference inside the test bungalow increased as the outside temperature decreased. To determine whether or not the temperature difference between the 2 and the 60 in. levels was proportional to the difference between the inside and outside temperature, table 14 was prepared evaluating the ratio of these factors for several days of operation with some of the heating devices tested. The observed temperature difference between the outside air and the air inside the building at the 30 in. level is represented by DT_1 in table 14. The 30 in. level was chosen because the room thermostat was located at that height and because it was the midpoint between the 2 and 60 in. levels. The observed temperature difference between the air 2 in. above the floor and 60 in. above the floor is represented by DT_2. The third column in table 14, $(DT_2/DT_1) \times 38$, represents the calculated temperature difference between the 2 and 60 in. levels for a 38 deg temperature difference between inside and outside, i.e., for an outside temperature of 32 F and an inside temperature of 70 F.

If the temperature difference between the 2 and 60 in. levels was directly proportional to the difference between interior and exterior temperatures, the ratio of DT_2 and DT_1 would be a constant. Then the value for the temperature between the 2 and 60 in. levels corrected to an outside temperature of 32 F would be the same no matter what the outside temperature was when the observations were made. The results obtained by these calculations show that the quantity $(DT_2/DT_1) \times 38$ was not strictly constant, but that with some exceptions its value remained reasonably steady during the use of any one heating device.

For the electric heater, the value of the quantity $(DT_2/DT_1) \times 38$ averaged 10.5 deg F with continuous forced circulation of 1,460 cfm of air; for the hot-water heating system it averaged 5.7 deg F, and for the oil fired warm air furnace, 19.1 deg F. It will be noted that the averages for the ratio $(DT_2/DT_1) \times 38$ in table 14 agree closely with the values for the temperature difference between the 2 and 60 in. levels at an outside temperature of 32 F indicated by the curves on Fig. 10 for the corresponding system.

A study of the data in table 10 shows no significant

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TABLE 14.—*Temperature difference from 2 to 60 in. above floor for an inside temperature of 70 F and an outside temperature of 32 F*

DT_1	DT_2	$\frac{DT_2}{DT_1} \times 38$	Weather	Wind Velocity and Direction
Electric Heater—Gravity Circulation				
°F	°F	°F		mph
34.8	11.9	13.0	Clear	5 N.
41.5	18.7	17.1	Clear	5 N.
48.9	18.3	14.2	Clear	15 NW.
51.0	20.3	15.1	Clear	Quiet
38.6	13.4	13.2	Clear	6 NW.
42.5	16.1	14.4	Clear	6 NW.
42.5	15.4	13.8	Cloudy	5 NW.
46.9	18.1	14.7	Cloudy	3 NW.
40.3	11.1	10.5	Clear	3 NW.
49.3	18.7	14.4	Clear	2 NW.
Average...	.....	14.0		
Electric Heater—Intermittent Forced Circulation (780 cfm)				
60.8	25.7	16.1	Clear	6 NW.
54.6	21.1	14.7	Clear	7 NW.
55.4	24.9	17.1	Clear	6 NW.
39.5	17.8	17.1	Cloudy	2 SE.
36.3	12.9	13.5	Clear	5 N.
49.1	21.0	16.3	Clear	12 NW.
Average...	.....	15.8		
Electric Heater—Intermittent Forced Circulation (1,460 cfm)				
52.0	16.7	12.2	Clear	10 NW.
54.1	17.1	12.0	Clear	9 NW.
43.0	13.8	12.2	Clear	5 NE.
38.9	13.6	13.3	Clear	2 N.
35.5	13.9	14.9	Clear	5 NW.
27.3	11.1	15.4	Clear	3 S.
46.6	13.8	11.3	Cloudy	10 NW.
41.6	17.4	15.9	Clear	9 NW.
Average...	.....	13.4		
Electric Heater—Continuous Forced Circulation (1,460 cfm)				
29.8	10.3	13.1	Partly cloudy	3 NW.
25.4	5.7	8.6	Partly cloudy	2 NW.
34.8	9.1	9.9	Cloudy	2 NW.
31.2	8.4	10.2	Cloudy	1 NW.
29.5	8.3	10.7	Cloudy	5 NW.
29.1	7.8	10.2	Cloudy	7 NW.
Average...	.....	10.5		
Oil Floor Furnace—Gravity Circulation				
37.9	16.2	16.2	Cloudy	2 NW.
33.9	14.3	16.0	Cloudy	3 SE.
36.5	15.6	16.2	Cloudy	1 SE.
33.6	13.9	15.7	Cloudy	2 E.
35.8	13.8	14.7	Clear	7 NW.
34.0	15.6	17.4	Cloudy	4 S.
37.3	15.6	15.9	Cloudy	5 NW.
Average...	.....	16.0		
Gravity Hot-Water System with Radiators				
50.4	9.0	6.8	Clear	15 NW.
44.0	6.7	5.8	Clear	12 NW.
37.0	5.7	5.9	Cloudy	9 NE.
24.4	2.8	4.4	Partly cloudy	9 NW.
Average...	.....	5.7		
Oil Furnace—Forced Circulation Through Plenum				
32.8	13.1	15.2	Clear	2 N.
23.0	15.1	24.9	Clear	4 W.
8.3	7.9	36.2	Clear	5 W.
18.8	11.0	22.2	Cloudy	3 NW.
21.3	8.3	14.7	Partly cloudy	3 NE.
35.8	13.4	14.2	Raining	10 NW.
41.5	16.6	15.2	Snowing	11 NW.
42.3	20.9	18.8	Clear	8 NW.
34.3	15.4	17.1	Clear	8 NW.
38.8	20.0	19.6	Clear	6 NW.
33.6	18.4	20.8	Clear	4 N.
25.0	14.0	21.3	Cloudy	2.5 NE.
25.8	11.5	16.9	Cloudy	2 NE.
33.4	15.0	17.1	Cloudy	2 N.
33.0	14.9	17.2	Cloudy	2.5 N.
34.8	16.7	18.2	Clear	5 N.
30.4	13.1	16.4	Clear	6 NW.
32.6	19.2	22.4	Clear	6.5 N.
28.6	11.1	14.8	Clear	7.5 N.
33.0	18.5	21.3	Clear	4.5 S.
46.3	22.8	18.7	Clear	6 NW.
40.3	17.7	16.7	Clear	5 N.
Average...	.....	19.1		

AMERICAN ARTISAN

National Oil Heat Exposition

26th Annual Oil-Heat Institute Convention

Mechanics' Hall, Boston

May 16-20-1949

26th Oil-Heat Institute Convention
National Oil Heat Exposition

A PROGRAM of interesting and important topics is being planned for the Oil-Heat Institute's 26th annual convention to be held at Boston in conjunction with the National Oil Heat Exposition May 16 through 20. As is always the custom, ladies are cordially invited to attend the OHI convention, and a program of entertainment is being arranged for them in a city and environs which can boast historic landmarks and novel attractions.

All convention meetings and sessions will be held at times not to conflict with the exposition, and will take place at the Statler Hotel. The first two days—Monday and Tuesday—are devoted to OHI directors and committee meetings, and the annual meetings of OHI of America and of its Accessory and Distribution Divisions.

On Wednesday, May 18, the Burning Oils Industry session will be held in the Imperial Room, Statler Hotel, starting at 9:30 a.m. R. S. Bohn, president of OHI, will be chairman of the meeting. Dr. W. C. Schroeder, chief, Office of Synthetic Liquid Fuels, Bureau of Mines, U. S. Department of the Interior, under whose supervision the Bureau's $60 million synthetics fuel research program utilizing coal and oil-shale is being conducted, will talk on "Heating Oils From Petroleum, Coal and Shale."

Dr. Schroeder's address will be followed by a "Symposium of Industry Problems", presented by a representative manufacturer and a representative distributor. Speaking for the manufacturers will be W. A. Matheson, director of Eureka Williams Corp., and for the distributors will be J. E. Horton, president, Horton Heating Corp., Albany, New York.

On Thursday, May 19, the Dealer Day session will be held in the Imperial Room, Statler Hotel, starting at 9:30 a.m. J. A. Collins, national chairman, Distribution Division, OHI, will preside. The session will open with an address by Dr. Courtney Brown, assistant head of the Coordination Economics Department and head of the Petroleum Economics Division, Standard Oil Co. (New Jersey). He will talk on burning oils and the future. A. S. Kozman, manager, Cook's Oil Co., Oakland, California, will address the meeting on "Competition in Automatic Heating." D. A. Packard, sales manager, Kelvinator division, Nash-Kelvinator Corp., will speak on "The Art of Specialty Selling."

On Friday, May 20, the Architects and Engineering Day session will be held in the Georgian Room, Statler Hotel, starting at 10:00 a.m. Frank Faust, manager, Commercial Engineering divisions, General Electric Co., will be chairman. There will be a forum on the subject of "Lower Heating Costs to Be Realized From Burners or Heat Absorbing Vessels?" Participating in the forum panel as representing various types of burning equipment will be the following: Pressure: Howard Earl, chief engineer, Williams Oil-O-Matic division, Eureka Williams Corp.; Commercial-industrial: George B. Franke, commercial engineer, York-Shipley, Inc.; Furnaces: Frank E. Mehrings, vice president in charge of sales, The Meyer Furnace Co.; Boilers: L. N. Hunter, vice president in charge of research, National Radiator Co.; Packaged units: Gerald W. Bohn, vice president in charge of engineering, Preferred Utilities Mfg. Corp.

Henry Wright, architect and consulting engineer of New York, then will address the meeting on "Recent Progress in Heating and Building Design."

Old Timers to Meet

J. W. Owens, national chairman, announces that the Old Timer's Club of the Oil Burner Industry, Inc., will hold its annual meeting on Tuesday, May 17. The location and plans for the meeting will be announced at the convention and members are told they can expect the usual outstanding party for which the club is famous. All arrangements for this meeting are being directed by Skipper Barr.

During the last month many exhibitors have been added to those who will show their products at the National Oil Heat Exposition, which will be held at Mechanics' Hall, Boston, May 16th through 20th.

For sentimental as well as practical reasons, the oil heating industry regards the New England market with considerable favor. New England figured prominently in the early days of the industry. In this territory the pioneers first established oil heat on the East Coast in public favor. Today the New England market ranks at the top in public acceptance of oil heat.

MONDAY, MAY 16
Institute Day

10:00 a.m. Retiring OHI Board Meeting
1:30 p.m. Annual Meeting—Accessory Division
1:30 p.m. Annual Meeting—Distribution Division
4:30 p.m. Show Committee Meeting—Mechanics Hall
7:00 p.m. Exposition Opens
10:30 p.m. Exposition Closes

TUESDAY, MAY 17
Ladies' Day

10:00 a.m. Annual Meeting—OHI of America
12:30 p.m. New OHI Board Luncheon Meeting
1:00 p.m. Exposition Opens
3:30 p.m. Ladies' Reception
10:30 p.m. Exposition Closes

WEDNESDAY, MAY 18
Industry Day

9:30 a.m. Burning Oils Industry Session
10:00 a.m. Ladies' Entertainment to 4:00 p.m.
1:00 p.m. Exposition Opens
10:30 p.m. Exposition Closes

THURSDAY, MAY 19
Dealer Day

9:30 a.m. Dealer Day Session
1:00 p.m. Exposition Opens
5:00 p.m. Exposition Closes
6:30 p.m. General Cocktail Hour—Statler
7:30 p.m. Annual Banquet and Entertainment—Statler

FRIDAY, MAY 20
Architects' and Engineering Day

10:00 a.m. Engineering Day Session
1:00 p.m. Exposition Opens
5:00 p.m. Exposition Final Closing

List of Exhibitors

Here are the names of exhibitors at the National Oil Heat Exposition, Boston, May 16–20. In most cases the personnel in attendance and products on display are listed. All exhibitors and booth numbers are included for the convenience of our readers.

A & C SALES AND SUPPLY CO., 51 Albion St., Boston 18, Mass.—Booth 123.

ALDRICH CO., Wyoming, Ill.—Booth 518.
In attendance: P. M. Stephenson, B. Mulder, E. L. Fox.
Exhibiting: Series B boiler-burner units; Model SAX all steel oil burner; model BX oil burner.
New Products: Bantam Boiler-Burner unit for small homes; model CX oil burner.

AMERICAN ARTISAN, 6 North Michigan Ave., Chicago 2, Ill.—Booth 375.
In attendance: Wallace J. Osborn, John E. Peterson, George Cutler, Robert J. Osborn.
Exhibiting: American Artisan, technical books, market data.

AMERICAN MOHAWK CO. INC., 580 Hudson St., New York City 14, N. Y.—Booth 524.
In attendance: Harry A. Toker, Harry S. Londa.
Exhibiting: Conversion oil burners.

AMERICAN RADIATOR & STANDARD SANITARY CORP., P.O. Box 1226, Pittsburgh 30, Pa.—Booth 624.

AMERICAN STOVE CO., Lorain Division, 1200 Long Ave., Lorain, Ohio.—Booth 312.
In attendance: J. M. Bayer, C. B. Tozer, C. L. Wessel.
Exhibiting: Quick Heat oil furnaces, gravity & forced air (vaporizing burner type). Quick Heat oil space heaters.

APPLIED MECHANICS CO., 167 Oliver St., Boston 10, Mass.—Booth 351.
In attendance: H. J. G. Rudolf, Burt Powers.
Exhibiting: Galongage, Fil-Thru Gauge.

AUTO-HEAT CORP., 311 W. 66th St., New York 23, N. Y.—Booth 319.

AUTOMATIC DEVICES CO., 53 West Jackson Blvd., Chicago 4, Ill.—Booth 591.

AUTOMATIC OIL HEATING DIV., NEW ENGLAND TECHNICAL INST., 486 Broad St., Providence 7, R. I.—Booth 301.

BACHARACH INDUSTRIAL INSTRUMENT CO., 7000 Bennett St., Pittsburgh 8, Penn.—Booth 656.
In attendance: B. H. Nunnally, John W. Smith.
Exhibiting: Fyrite combustion testing instruments, including the CO_2 indicator, draft gauges and stack thermometers; direct reading velocity meter. Tempscribe temperature and operation recorders; vaporizing burner kit. True-Spot smoke tester.
New Products: Florite direct reading velocity meter; vaporizing burner kit; True-Spot smoke tester.

BELL & GOSSETT CO., 8200 N. Austin Ave., Morton Grove, Ill.—Booth 610.

BETHLEHEM FOUNDRY & MACHINE CO., 225 W. Second St., Bethlehem, Pa.—Booth 688.
In attendance: C. S. Dieter, L. E. Hodge, Raymond Dietz, James Meissner.
Exhibiting: Dynatherm boiler-burner units; Bethlehem conversion oil burners.

BOSTON MACHINE WORKS CO., 7-17 Willow St., Lynn, Mass.—Booth 619.

BROWN PRODUCTS CO., 96-08 72d Ave., Forest Hills, N. Y.—Booth 359.
In attendance: A. Brown, W. H. Flickinger, George Brink.
Exhibiting: Boiler-burner unit; domestic water heater. Brown Bayce-Heet, water circulators.
New Products: Baseboard radiation; water circulator.

CATSKILL METAL WORKS, INC., Catskill, N. Y.—Booth 511.
In attendance: T. L. Seaman, Ed Gardner, Ernest F. Karbe, James McCauley.
Exhibiting: Conversion oil burners, models OB-2, OB-3, OB-7.

CENTURY ENGINEERING CORP., 401 Third St., S.E., Cedar Rapids, Iowa—Booth 580.

CITIES SERVICE OIL CO., 70 Pine St., New York, N. Y.—Booth 579.
In attendance: Richard J. Borden, John L. Gamble, John B. Crawford, Donald W. Solis.
Exhibiting: Oil burners, heating equipment and fuel oil. Also new Heat Prover (flue gas analyzer).

COLE SEWELL ENG. CO., 2288 University Ave., St. Paul 4, Minn.—Booth 550.
In attendance: I. E. Loring, H. J. Sewell.
Exhibiting: Cole draft governors. Draft Korektors.

COLEMAN CO., 48 Waters Ave., Everett, Mass.—Booth 125.

COMMERCIAL FILTERS CORP., 18 West Third St., Boston 27, Mass.—Booth 760.
In attendance: E. W. Sherburne, J. R. Chisholm, E. W. Dumler, T. A. Rockett.
Exhibiting: Fulflo filters for gravity and pressure type oil burners and the bulk filtration of heating oils. Fulflo filters for domestic and industrial clarification of water. Fulflo filters for clarification of liquids and gases generally.
New Products: Redesign of standard filter models, featuring new types and sizes of oil burner filters.

CROTTY MFG. CORP., 133-15 35th Ave., Flushing, N. Y.—Booth 231.
In attendance: Michael C. Crotty, Alex C. Hart, Ralph Sibilla.
Exhibiting: Domestic steel boilers, water walls.

DELAVAN ENGINEERING CO., 414-12th St., Des Moines 9, Iowa.—Booths 765-767.
In attendance: Nelson B. Delavan, Eugene O. Olson, H. L. McNally.
Exhibiting: Delavan-Balloffet design oil burner nozzles and accessories; serviceman's kit; inspection mirrors. Adaptraps (anti-drip adapters); sludge solvent.
New Products: Adaptrap (anti-drip adapters). Sludge solvent.

DELCO APPLIANCE DIV., GENERAL MOTORS CORP., 391 Lyell Ave., Rochester 1, N. Y.—Booth 458.

DELCO PRODUCTS DIV. OF GENERAL MOTORS CORP., Dayton 1, Ohio.—Booth 758.
In attendance: C. L. Holverstott, P. W. Kronauge.
Exhibiting: Oil burner motors; blower motors for heating and ventilating.

DETROIT LUBRICATOR CO., 5900 Trumbull Ave., Detroit 8, Mich.—Booth 413.
In attendance: William H. Hohmeyer, Harold L. Walker, Norbert Sell, Robert M. Bard.
Exhibiting: Oil burner controls and accessories.
New Products: Modulating oil valve for vaporizing burners.

DIELECTRIC PRODUCTS CO., 125 Virginia Ave., Jersey City 5, N. J.—Booth 763.

DOLE VALVE CO., 1933 W. Carroll Ave., Chicago 12, Ill.—Booth 418.
In attendance: Thomas G. Colter, Paul Rimbach, William Wallin, Henry Aronson, J. F. Lund.
Exhibiting: Thermostatic air controls (automatic registers). The new No. 20 automatic hot water air valve; air and vacuum valves; water mixers.

DONGAN ELECTRIC MFG. CO., 2987-3001 Franklin St., Detroit, Mich.—Booth 764.

DUO-THERM DIV. OF MOTOR WHEEL CORP., Lansing 3, Mich.,—Booth 218.
In attendance: R. H. Reeder, E. M. Crary, K. G. Egeler, J. H. Kennedy, G. W. Phillips, Theo. Valjean, A. R. Frantz, T. R. Merrill, Arthur Kretschman.
Exhibiting: Oil burning furnaces; oil burning space heaters; oil burning water heaters.

ECKHART MANUFACTURING CO., 470 First Ave., W., Roselle, N. J.—Booth 560.
In attendance: Arnold Eckhart, Jr., Walter E. Eckhart, Arthur E. Wood.
Exhibiting: Oil burners.
New Products: Advance type firing head oil burner Model SR-C with Monitor Head assembly.

EDDINGTON METAL SPECIALTY CO., Bristol Pike, Eddington, Penn.—Booths 565-567.
In attendance: Walter V. Czarnecki, Jr. Stanley Czarnecki, Casimer M. Czarnecki, Wesley Czarnecki.
Exhibiting: Pressure regulating and cut-off valves; filters; suction-line and pipe-line strainers; spray nozzles; air cones and stabilizers; flexible inspection mirrors.

ELECTROL BURNER MFG. CO., INC., 22 Union Ave., Rutherford, N. J.—Booth 113.
In attendance: R. F. Andler, L. A. Schultz, L. W. Schroeder.
Exhibiting: Oil burners, air conditioners, water heaters.
New Products: Semi-commercial burner and boiler.

FAIRBANKS MORSE & CO., 91 Wyoming Ave., Malden, Mass.—Booth 367.

FEDERAL BOILER CO., INC., Granite & West Sts., Midland Park, N. J.—Booths 757-759.
In attendance: James H. Legg, Raymond Shuster, Herbert Varney, Robert Varney.
Exhibiting: Steel oil fired residential and junior commercial heating boilers, Series F.C.-F.D. and F. V.
New Products: New Series F. V., Vertical oil fired boilers, for the speculation type of small residential boilers for hot water, steam and radiant heated homes.

FIELD CONTROL DIVISION OF H. D. CONKEY & CO., Mendota, Ill.—Booth 377.
In attendance: C. W. Potter, James Burch, Fay Kinne, Warren Hulke, George Peterson, Mark Acheson, William Millholland, Howard Waff, William Heagerty, Russell Glass.
Exhibiting: Barometric draft controls. Scotty

(Please turn to page 98)

R. S. Bohn, president, OHI

Left to right—G. T. Kaufman, technical secretary; A. E. Hess, managing director; C. F. Curtin, secretary-treasurer; W. O. Spiess, national secretary, Distribution Division—All of OHI.

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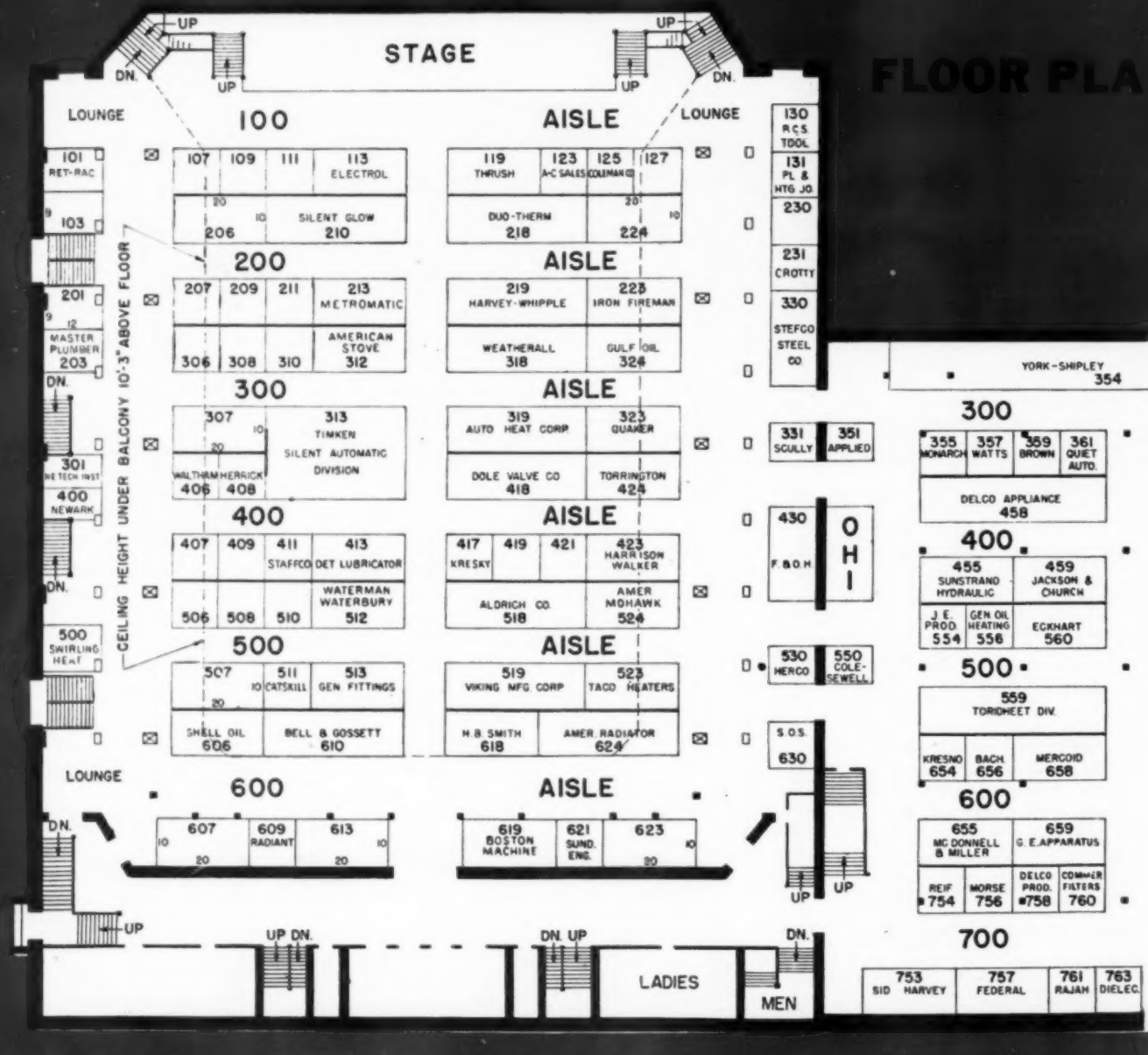
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DUO-THERM 218 224
219 HARVEY-WHIPPLE 223 IRON FIREMAN
WEATHERALL 318 GULF OIL 324
319 AUTO HEAT CORP 323 QUAKER
DOLE VALVE CO 418 TORRINGTON 424
417 KRESKY 419 421 423 HARRISON WALKER
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519 VIKING MFG. CORP 523 TACO HEATERS
H.B. SMITH 618 AMER. RADIATOR 624
619 BOSTON MACHINE 621 SUND. ENG. 623
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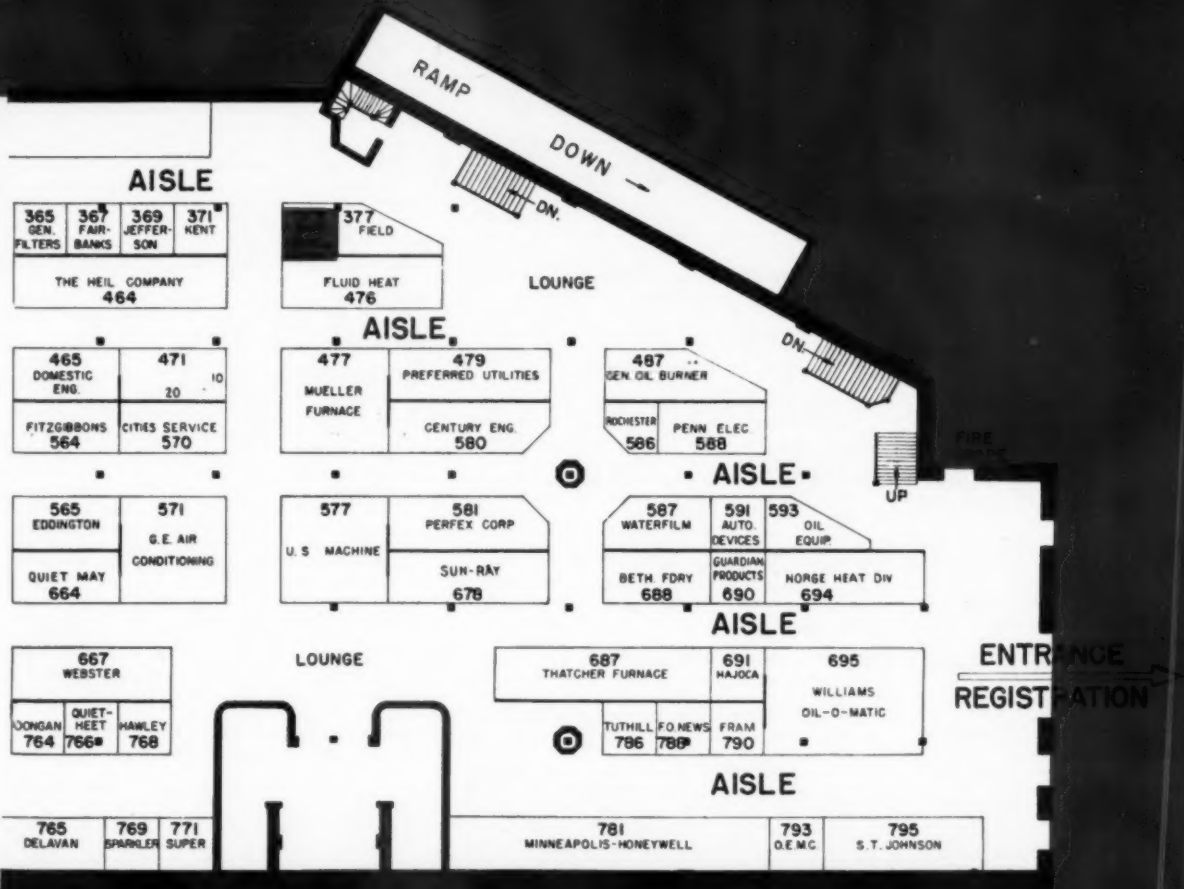
N FOR NATIONAL OIL HEAT EXPOSITION

MECHANICS' HALL • BOSTON

MAY 16 thru 20, 1949



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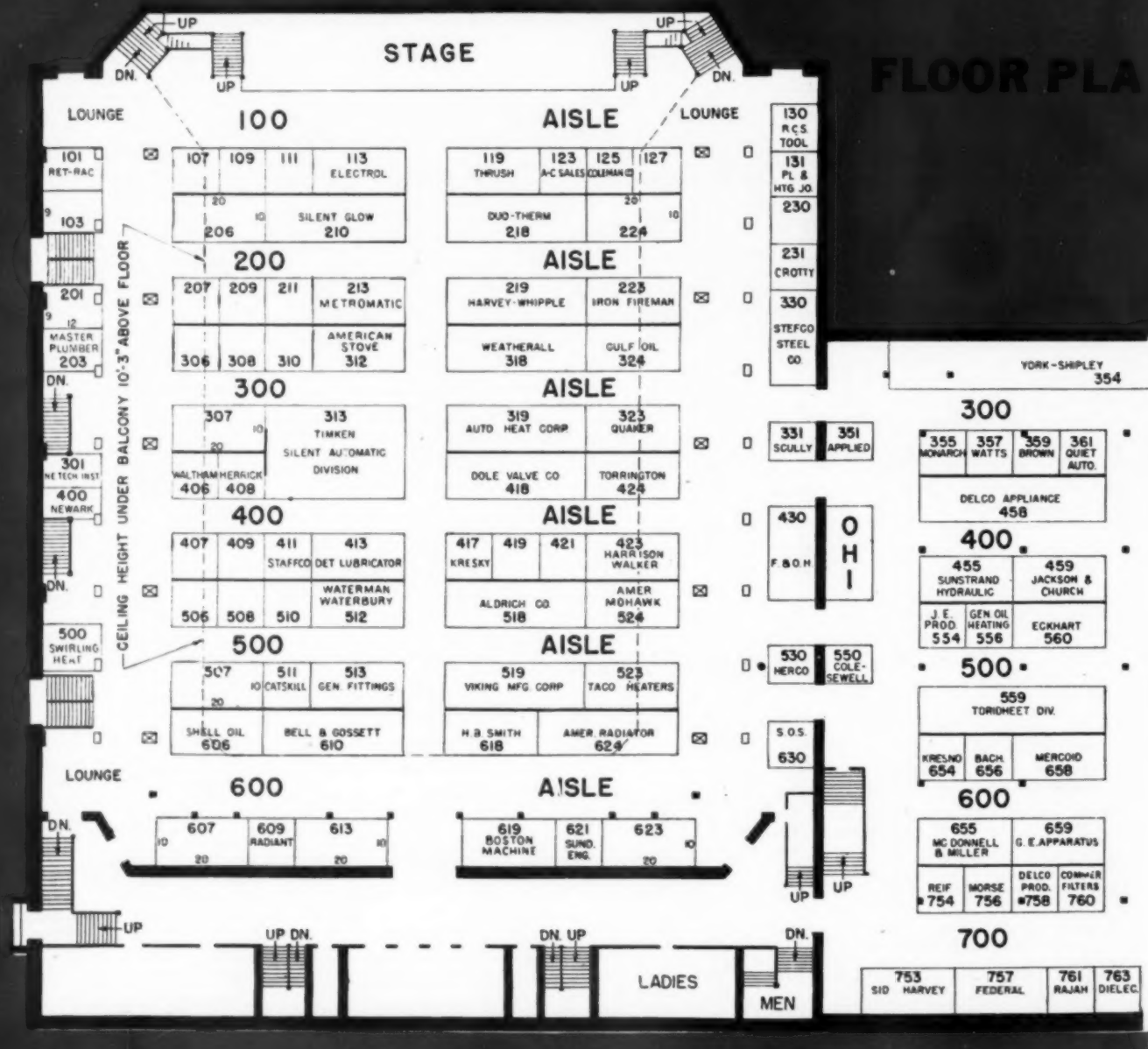
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DUO-THERM 218 224
207 209 211 213 METROMATIC
AMERICAN STOVE 306 308 310 312
219 HARVEY-WHIPPLE 223 IRON FIREMAN
WEATHERALL 318 GULF OIL 324
307 313 TIMKEN SILENT AUTOMATIC DIVISION
WALTHAM 406 HERRICK 408
319 AUTO HEAT CORP. 323 QUAKER
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407 409 411 STAFFCO 413 DET LUBRICATOR
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417 KRESKY 419 421 423 HARRISON WALKER
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KRESNO 654 BACH. 656 MERCOID 658
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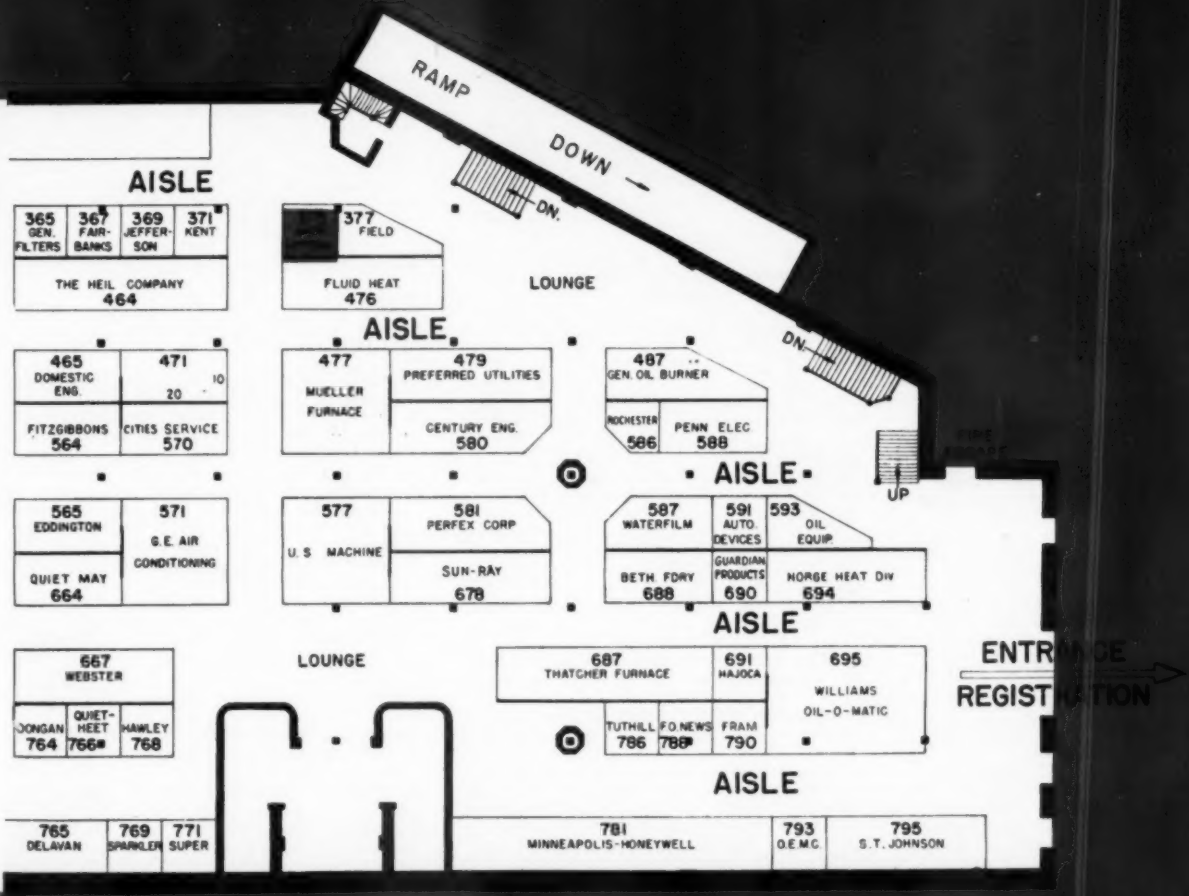


Field controls. Fuel Saving System.
New Products: Fuel Saving System will be demonstrated. The Electronic balancing gauge that gives Field barometric controls their recognized closer balance for oil heating units.

FITZGIBBONS BOILER CO. INC., 101 Park Ave., New York 17, N. Y.—Booths 564-566.
In attendance: Paul K. Addams, G. E. Olsen, J. R. Collette, G. Nelligan, F. J. Partridge.
Exhibiting: 400 Series steel boilers. 80 Series steel boilers. D Type steel boilers.
New Products: New RZU Junior steel boilers. Directaire—air conditioning.

FLUID HEAT DIV., ANCHOR POST PRODUCTS, INC., 6500 Eastern Ave., Baltimore 24, Md.—Booth 476.

FRAM CORP., Providence 16, R. I.—Booth 790.
In attendance: E. L. Sandberg.

Faneuil Hall

Exhibiting: Domestic oil burner filter line.
New Products: F1210 filter; F1211 filter; F1212 filter.

GENERAL ELECTRIC CO. APPARATUS DEPT., Schenectady, N. Y.—Booths 659-661.
In attendance: C. J. Monroe, Frank Ondrovik.
Exhibiting: Domestic and commercial oil burner motors, fan motors, ignition and control transformers.
New Products: A 20 frame unit bearing fractional hp motor suitable for operation in any position.

GENERAL ELECTRIC CO., 5 Lawrence St., Bloomfield, N. J.—Booth 571.

GENERAL FILTERS, INC., 12890 Westwood Ave., Detroit 23, Mich.—Booth 365.
In attendance: A. D. Redner, Mrs. Grace Redner, Robert G. Gregory, Frank H. Gerlach, Les Sheldon.
Exhibiting: Three models of fuel oil filters.

GENERAL FITTINGS CO., 123 Georgia Ave., Providence 5, R. I.—Booth 513.
In attendance: Horace F. Horton, John J. Cotter, Frank E. Johnson, Charles A. Maine, Jack Jones, Robert F. Hull.
Exhibiting: Tankless & indirect water heaters; converters; oil pre-heaters; thermostatic water mixing valves; water hammer silencers.
New Products: Expansion tankless water heater; industrial instantaneous water heater.

GENERAL OIL BURNER CORP., 2300 Sinclair Lane, Baltimore 13, Md.—Booths 487-489.
In attendance: Robert E. Lee, Charles Hight, Howard J. Hughes, Harold Browning.
Exhibiting: Conversion burners; steel boilers; warm air conditioners; Floorline hot water radiation; Walline warm air.
New Products: Hot water Floorline radiation. Walline warm air.

GENERAL OIL HEATING CORP., 322-326 55th St., West New York, N. J.—Booth 556.
In attendance: Wm. D. Brooks, Wm. D. Brooks, Jr.
Exhibiting: Genoco Oil Burners.

GEROTOR MAY CORP. MAY OIL BURNER DIV., Maryland Ave. & Oliver St., Baltimore 3, Md.—Booths 664-666.
In attendance; E. E. Yaggy, Jr., C. R. Collins, J. E. Connors, G. I. Chinn. J. O. Miller, E. R. Schuelke.
Exhibiting: Quiet May oil burners.

GUARDIAN PRODUCTS CORP., 1215 East Second St., Michigan City, Ind.—Booth 690.
In attendance: H. L. Forgash, R. O. Maldy, H. J. Prueter.
Exhibiting: Flexible couplings; oil tank valves.
New Products: Oil tank valve, machined from bar stock.

GULF OIL CORP., Gulf Building, Pittsburgh 30, Penn.—Booth 223.
In attendance: W. D. Gillespie.
Exhibiting: Quality fuel oils and petroleum products.

HAJOCA CORP., P.O. Box 7319, Philadelphia 1, Pa.—Booth 691.

HARBISON-WALKER REFRACTORIES CO., 1800 Farmers Bank Bldg., Pittsburgh 22, Penn.—Booth 423.
In attendance: P. B. Richardson, L. F. Wilson, James Gifford, Robert Straka, Jr., George Webster, James Mitchell, Robert Highley, R. B. Jenner, J. E. O'Reilly, R. R. Miller.
Exhibiting: First and second quality fireclay brick, intermediate duty, super-duty, high alumina, acid proof and insulating fire brick; high temperature bonding mortars; refractories for oil heat furnaces, combustion chambers for oil heat furnaces, etc.
New Products: H-W plastics and castables.

SID HARVEY, INC., 104 E. Mineola Ave., Valley Stream, N. Y.—Booths 753-755.

HARVEY WHIPPLE, INC., 55 Emery St., Springfield, Mass.—Booth 219.

HEIL CO., 3000 W. Montana St., Milwaukee 1, Wis.—Booths 464-466-468-470.
In attendance: George Hochstein, Roy King, John Barclay, Karll Mould, Walter Haise.
Exhibiting: KF-1 oil-fired furnace; KF-2 oil-fired furnace; HB-1 oil fired boiler; HB-2 oil-fired boiler; SG-1 conversion burner; SG-2 conversion burner.

HERCO OIL BURNER CORP., 109 W Chestnut St., Lancaster, Penn.—Booth 530.
In attendance: H. H. Wilkinson, Fred A. Wiker.
Exhibiting: Oil burners.

HERRICK CO., 352 C St., So. Boston 27, Mass.—Booth 512.
In attendance: W. H. Rigby, T. F. Connelly, T. F. Donahue, D. Miner, J. Grover, A. Knight, C. Hutchings.
Exhibiting: Comfortrol oil fired winter air conditioners.

IRON FIREMAN MFG. CO., 3170 W. 106th St., Cleveland 11, Ohio—Booth 223.
In attendance: L. N. Zimmerman, H. M. Cutshaw, C. B. McKernon, W. B. Calhoun, R. F. Lunt, S. M. Wright.
Exhibiting: Domestic Vortex and pressure burner; commercial and industrial oil burners; winter air conditioning furnace; boiler-burner unit.

JACKSON & CHURCH CO., 306 Stoker Drive, Saginaw, Mich.—Booth 459.
In attendance: L. S. Redford, C. S. Low.
Exhibiting: Poweraire and Powerated units.
New Products: Space saving oil fired suspension units with a range of 112,000 Btu through 224,000 Btu at bonnet.

JEFFERSON ELECTRIC CO., 25th Ave. & Madison, Bellwood, Ill.—Booth 369.

S. T. JOHNSON CO., 401 N. Broad St., Philadelphia 8, Pa.—Booths 795-797-799.
In attendance: Robert P. Johnston, L. W. Kline, W. Thomas, W. E. Lees.
Exhibiting: Conversion burners for all grades of oil from ½ to 120 gph. Oil fired water heaters 100 to 540 gph. Oil fired boiler-burner units. Combination oil and gas conversion burners.
New Products: Burners for all grades of oil and gas.

KENT CO. INC., 167 Canal St., Rome, N. Y. Booth 371.
In attendance: C. E. Clifford, J. W. Jones, G. F. Hill, Leon Steele, Ralph Nevers.
Exhibiting: Double suction furnace cleaner.

KRESKY MFG. CO., INC., 2nd & H St., Petaluma, Calif.—Booth 417.
In attendance: Bert Carlson, Marshall Newcomb, Wesley Ricker, Mr. Weber, Sydney Bernstein, Mr. Gardner.
Exhibiting: Wall furnace model WF; forced air circulating floor furnace model EVF; economy floor furnace model EFR-50; utility hi-boy furnace model 75; cottage basement furnace model COT; vertical flame range conversion burner model RKR; horizontal flame range burner model HR.
New Products: New low-cost wall furnace model WF designed for low-cost housing application. Forced-air circulating floor furnace Evenheat model EVF—the floor furnace with forced air circulation to give central heating performance.

KRESNO-STAMM MFG. CO., (AMERICA) INC., 345 Commercial Ave., Palisades Park, N. J.—Booth 654.
In attendance: B. I. Stamm, M. P. Holden, N. Fleisler, A. Brodsky.
Exhibiting: Vaporizing oil burners—Kres-Kno; pressure atomizing oil burners—Pow-R-matic.

New Products: Vaporizing oil burners for furnaces, boilers and heaters designed for the low-cost housing market.

McDONNELL & MILLER INC., Wrigley Building, Chicago 11, Ill.—Booths 655-657.
In attendance: Howard Peary, Parker Devlin, Richard Berry, James Ramsay, Nils W. Swanson, George LaRoi, E. N. McDonnell.
Exhibiting: Boiler water feeders—low water fuel cut-offs—pump controllers—all for steam boilers; safety relief valves and automatic water feeders—for hot water heating boilers; humidifier water level controls—for warm air furnaces. Also special float-operated switches and float-operated valves, for special applications.
New Products: New safety relief valve—new make-up water feeders for receiving tanks.

MERCOID CORP., 4201 Belmont Ave., Chicago 41, Ill.—Booths 658-660.
In attendance: Hugh Courteol, J. W. Owens, I. E. McCabe, W. L. Colterjohn, R. F. Fisher, Al Johnson, W. K. Stauffer, Frank Hayes, K. Reiley, W. E. Jones, P. J. Provost, F. W. Ayer.
Exhibiting: Complete line of automatic controls for heating, air conditioning, refrigeration and various industrial applications.

METROMATIC MFG. CO., 21 Henderson St., Everett 49, Mass.—Booth 213.
In attendance: Fred D'Angelo, Bert Cosentino, Wendell Austin, Robert W. Pyne, Robert A. Sykes, F. E. Douglas, Frank Bellevue, Charles Osgood, Irving Krutter.
Exhibiting: Metropac air conditioner with built-in year around hot water supply. Metromatic oil burner with the patented removable head.
New Products: The Metropac air conditioner will be operated to practically demonstrate the action of the quadrant damper to permit both summer and winter conditioning, while producing a year around supply of domestic hot water.

MINNEAPOLIS-HONEYWELL REGULATOR CO., 2753 Fourth Ave. So., Minneapolis 8, Minn.—Booths 781, 783, 785, 787, 789, 791.
In attendance: Tom McDonald, A. H. Lockrae, Arnold Michelson, Warren Jennings, H. E. Williams, W. J. Brown, John Dorsey, D. J. Peterson, C. C. Cochran, H. E. Chapler, W. J. McGoldrick, John Donovan, George Oliver, Gage Masterson, Robert Hayes.
Exhibiting: Electronic controls for domestic and industrial oil burners; electronic controls for panel heating; Time Modulation controls; the Chronotherm; thermostats, limit controls and Protectorelays for domestic and industrial oil burners.

MONARCH MFG. WORKS, INC., 2501 E. Ontario St., Philadelphia 34, Pa.—Booth 355.
In attendance: J. M. Carroll, E. B. Frame, R. F. Stone.
Exhibiting: Oil burner nozzles; combustion heads; valves; strainers.

MORSE-SMITH-MORSE, INC., 165 Dexter Ave., Watertown 72, Mass.—Booth 756.
In attendance: John C. Dieselman, Robert E. Chase.
Exhibiting: Firomatic safety valves, oil filters, tank gauges, thermal switches.

L. J. MUELLER FURNACE CO., 2005 West Oklahoma Ave., Milwaukee 7, Wis.—Booth 477.
In attendance: C. L. Hewitt, Jr., F. J. Nunlist, H. B. Smith, J. H. Reock.
Exhibiting: Oil fired furnaces.

NEWARK TRANSFORMER CO., Linden & Park Aves., Linden, N. J.—Booth 400.

NORGE HEAT DIV., BORG-WARNER CORP., 670 E. Woodbridge St., Detroit 26, Mich.—Booth 694.

OIL EQUIPMENT LABORATORIES, INC., Bridge St., Elizabeth, N. J.—Booth 593.

OIL EQUIPMENT MFG. CORP., P.O. Box 1533, New Haven 6, Conn.—Booth 793.

PENN ELECTRIC SWITCH CO., Goshen, Ind.—Booths 588-590.
In attendance: A. W. Barr, A. L. Rubel, E. A. Price, J. E. Corbett, Carlos Morgan, M. E. Henning, R. H. Luscombe, R. V. Clark, R. L. Ratliff.
Exhibiting: Room thermostats, humidistats, day-nite tem-clocks, hot water and warm air temperature controls, steam pressure controls, relays and relay transformers, oil burner stack switches.
New Products: Liquid expansion furnace controls, line starters and motor contactors, boiler water level controls.

The State House, Boston

PERFEX CORP., 500 W. Oklahoma Ave., Milwaukee 7, Wis.—Booth 581.
In attendance: Messrs. Lewis, Butler, Black, Pratt, McGuire, Campbell, DeVos, Neess, Meeg, Soper, Blackhall, and Jensen.
Exhibiting: A complete line of controls for oil-fired heating systems. Instruments and controls for industrial oil burners.
New Products: Enlarged scale models of new model 165 Magic Dial thermostat & model 5520 oil burner primary control.

PREFERRED UTILITIES MFG. CORP., 1860 Broadway, New York 23, N. Y.—Booths 479-483.

QUAKER MFG. CO., 223 West Erie St., Chicago 10, Ill.—Booth 323.
In attendance: A. T. Atwill, H. J. Nelson, O. B. Nelson, M. A. Young.
Exhibiting: Vaporizing pot type furnaces (both basement and utility room type); conversion burners; space heaters.

QUIET AUTOMATIC BURNER CORP., 33 Bloomfield Ave., Newark 4, N. J.—Booth 361.
In attendance: Joseph Prince, Edward Hill, R. Hobbs, E. MacMillan, J. G. Kaveny, Frank Wade, Harlan W. Cox, John Damiano.
Exhibiting: Quiet Automatic oil burners; Gas-O-Tronic combination gas & oil burner; Dual Heat combination gas & oil burner.
New Products: Gas-O-Tronic combination (power type) gas & oil burner; several new improvements to burn catalytic and No. 5 oil.

QUIET-HEET MFG. CORP., 135 N.J.R.R. Ave., Newark 5, N. J.—Booth 766.
In attendance: S. L. Peters, S. L. Sloan, H. M. Spitzer, I. Winston, M. Kenneth.
Exhibiting: Oil burners, sump pumps, window sill room air conditioners.
New Products: New room air conditioner has a ½ hp hermetically sealed refrigeration system. This unit is especially resigned for very quiet operation, and features a two-pass evaporator for maximum efficiency. Filters are easily replaced by lifting the cabinet cover. Thermostat to control temperature available.

RADIANT UTILITIES CORP., 8817 - 18th Ave., Brooklyn 14, N. Y.—Booth 609.
In attendance: Jacob G. Goldberg, Julius S. Goldberg, Arthur A. Marcus, Joseph Bloom.
Exhibiting: Radiant oil burners.
New Products: New model burner with a capacity of ¾ of a gallon to two gallons per hour. This is a flanged burner that can be fitted to any type of boiler or furnace unit.

RAJAH CO., 53 Locust Ave., Bloomfield, N. J. —Booth 761.
In attendance: Robert A. Bell, Ernest W. Law.
Exhibiting: Terminals and tools.

R.C.S. TOOL SALES, Joliet, Ill.—Booth 130.

REIF-REXOIL, INC., 37-43 Carroll St., Buffalo 3, N. Y.—Booth 754.

RET-RAC CORP., 36-01 Lawrence St., Flushing, New York, N. Y.—Booth 101.
In attendance: Harry W. Carter.
Exhibiting: High pressure, conversion type, domestic oil burners. Domestic type—tankless heaters.

ROCHESTER MFG. CO. INC., 100 Rockwood St., Rochester 10, N. Y.—Booth 586.
In attendance: Clark L. Hastings, John W. Kershaw, William Chase, William J. Debler.
Exhibiting: Direct and remote indicating fuel oil tank gauges. Vacuum and pressure gauges. Stack thermometers and air circulating control kits.
New Products: Air circulating control kits.

SCULLY SIGNAL CO., 80 First St., Cambridge 41, Mass.—Booth 331.
In attendance: Frank P. Scully, Carl Goddard, George Schutter, Robert Young, Edward Mathey, Arthur Gray.
Exhibiting: Ventalarm tank fill signal. Fasfill connector.
New Products: Remotamatic nozzle pump control (brand new product). A mystery item (to be announced at show).

SHELL OIL CO., INC., 50 W. 50th St., New York 20, N. Y.—Booth 606.

SILENT GLOW OIL BURNER CORP., 1477 Park St., Hartford 6, Conn.—Booth 210.
In attendance: Richard W. Secor, Fred Quattromani, B. F. Filieo, N. F. Heym.
Exhibiting: Power oil burners; range oil burners.

H. B. SMITH CO., INC., 57 Main St., Westfield, Mass.—Booth 618.
In attendance: C. T. Flint, P. R. Williams,

A. J. Holmes, A. S. Barnes, E. Herzog, J. E. Reed.
Exhibiting: Oil burning boilers.

S. O. S. PRODUCTS CO., INC., 282 Nassau Ave., Brooklyn 22, N. Y.—Booth 630.
In attendance: I. S. Pryor, G. G. French, S. S. Schwartz, E. B. Freeman.
Exhibiting: Chemical and refractory products. Fire King combustion chamber. Speed Heet combustion chamber.

SPARKLER MFG. CO., Mundelein, Ill.—Booth 769.

STAFFCO ENGINEERING CO., 6600 South Austin Ave., Chicago 38, Ill.—Booth 411.
In attendance: Fred Ravnsbeck.
Exhibiting: Industrial rotary oil burners.
New Products: Combination gas-oil burner.

STEFCO STEEL CO., Michigan City, Ind.—Booth 330.
In attendance: Jack Gregory, John Powell, Frank Hughes, Burt Power, Robert Hughes.
Exhibiting: Panelox stainless steel combustion chambers.
New Products: Stefco will show for the first time the complete Panelox line which includes the basic round Panelox with the improved front panel and reinforced seams and the completely new square and rectangular Panelox chambers which were developed as a result of trade and manufacturer demand for a Panelox chamber that would be adaptable to any size or shape of standard fire-boxes.

SUN-RAY BURNER MFG. CORP., 139-24 Queens Blvd., Jamaica 2, New York. Booth 680.
In attendance: Gabe M. Marin, Alfred Luft, Henry E. Nickerson, Mike Bressen, Jack Thurston, Joseph Amato, Emmons Nickerson, Al Leavitt.
Exhibiting: Oil burners.
New Products: Domestic oil burners featuring the Shell-Developed combustion head.

SUNDSTRAND ENGINEERING CO., 1325 Seventh St. Rockford, Ill.—Booth 621.
In attendance: R. H. Gustafson.
Exhibiting: Conversion gun-type burners. Unit model gun-type burners.

SUNDSTRAND MACHINE TOOL CO., Rockford, Ill.—Booth 457.
In attendance: C. W. Lang, B. F. Olson, L. H. Schuette, O. E. Mayfield, H. O. Wahlmark, W. R. Kiefer, P. A. Anderson,
Exhibiting: Oil burner pumps and fuel units.
New Products: Model R two-stage fuel unit, solenoid unit.

SUPER ELECTRIC PRODUCTS CORP., 1057 Summit Ave., Jersey City 7, N. J.—Booth 771.
In attendance: Charles Rapiport, Max J. Sarver, Henry Winston, Arthur Koyle, George Eulo.
Exhibiting: Oil burner ignition transformers.

SWIRLING HEAT CORP., 1775 Broadway, New York 19, N. Y.—Booth 500.

TACO HEATERS INC., 137 South St. Providence 3, R. I.—Booth 523.
In attendance: J. Balter, G. Gilfeather, E. T. Houlihan, J. R. Murphy, R. T. Schoerner.
Exhibiting: Indirect hot water heaters, venturi fittings, reducing valves, relief valves, flow check valves, Flo-Jet valves, Taco-Matic valve, Paneltrol valve, circulators, tempering valves, etc.
New Products: Taco-Vent automatic hot water air valve.

THATCHER FURNACE CO., Center St., Garwood, N. J.—Booth 687.
In attendance: C. Sahler, R. Cook, M. Beard, D. Turner, E. Seeley, M. MacLellan, C. Olson, P. Fleury.
Exhibiting: V-Series oil fired Comfortmaster. Oilmaster Series A boiler. No. 550 oil-fired winter air conditioner. A-204 oil fired winter air conditioner. No. 481 oil fired winter air conditioner. O-174 oil fired forced air furnace.

H. A. THRUSH & CO., 21 E. Riverside Drive, Peru, Ind.—Booth 119.
In attendance: H. E. Thompson, D. W. Heckman, F. L. Williams, R. E. Lund, C. S. Wilmer, E. D. Noland, G. H. Fox.
Exhibiting: Complete line of hot water heating specialities, including circulators, flow control valves, relief valves both low pressure and high pressure. Reducing valves, both low pressure and high pressure. Thrush indirect water heaters and a complete line of one pipe fittings. Electrical controls and the exclusive 201 radiant heat control.
New Products: Working display demonstrating Thrush circulator, flow control valve and both cast iron adjustable and bronze adjustable supply tee.

TIMKEN SILENT AUTOMATIC DIV., THE TIMKEN DETROIT AXLE CO., Box 56, Roosevelt Station, Detroit 32, Mich.—Booths 313-410.

TORIDHEET DIV.-CLEVELAND STEEL PRODUCTS CORP., 7306 Madison Ave., Cleveland 2, Ohio—Booth 559.
In attendance: W. J. Smith, Jr., R. J. Lucas, J. F. Donnelly, L. D. Clough, J. A. Lappin, D. W. Rouse, L. F. Dienst.
Exhibiting: Rotary Wall Flame conversion burners, pressure-atomizing conversion burners, winter air conditioning furnaces, boiler-burner units, oil-fired hot water heaters.
New Products: Hi-boy winter air conditioner, gun-fired boiler-burner unit.

TORRINGTON MFG. CO., 70 Franklin St., Torrington, Conn.—Booth 424.

TUTHILL PUMP CO., 939 E. 95th St., Chicago 19, Ill.—Booth 786.
In attendance: Wm. J. Wagner, J. D. Young, E. W. Chapman, R. L. Tannehill.
Exhibiting: Oil burner fuel units & oil burner pumps.

U. S. MACHINE CORP., 320 North C St., Lebanon, Ind.—Booth 577.
In attendance: Herman E. Winkler, Claude A. Potts, J. O. Williams, Walter E. Blake.
Exhibiting: Winkler high and low pressure oil burners; oil floor furnace; oil space heater; oil furnaces.
New Products: Emphasis on Winkler low pressure oil burner which features non-clog nozzle which is 32 times larger than conventional high pressure nozzle. Unit burns wide range of oils.

V & E PRODUCTS CO., Schuylkill Haven, Pa.—Booth 554.
In attendance: Walter Moriarty, Jos. H. Embanks, Lionel Jacobs.
Exhibiting: Steel water tube domestic heating boiler; Wall-Flame steel heating boiler; small boiler burner units.

WALTHAM OIL BURNER CO., 1214 Bennington St., East Boston 28, Mass.—Booth 406.

WATERFILM BOILERS, INC., 154 Ogden Ave., Jersey City 7, N. J.—Booths 587-589.

WATERMAN-WATERBURY CO., 1121 Jackson St., N. E., Minneapolis 13, Minn.—Booth 512.
In attendance: Stuart Smith, W. G. Morrisey, W. H. Rigby.
Exhibiting: Waterbury oil fired furnaces & air conditioners.

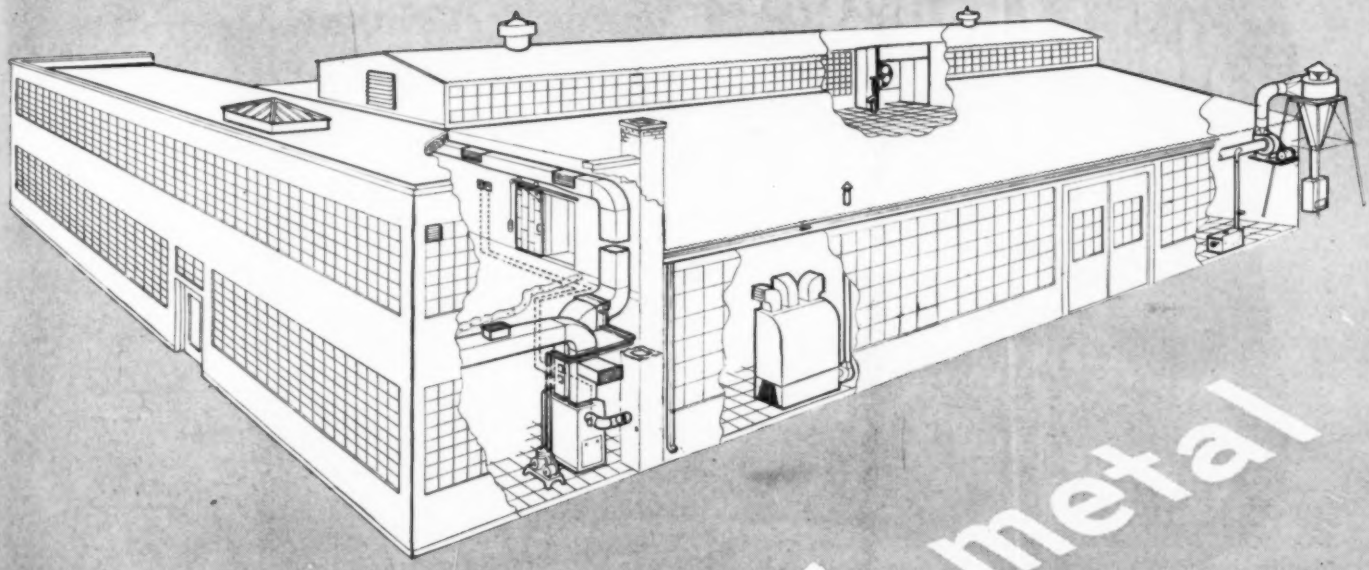
WATTS REGULATOR CO., Embankment, Lawrence, Mass.—Booth 357.
In attendance: Geo. B. Horne, Cyrus S. Gates, W. M. Dillon, John Dale.
Exhibiting: Line of plumbing & heating specialties.
New Products: No. 188 vacuum breaker.

WEATHERALL ENGINEERS, INC., 387 Charles St., Providence 4, R. I.—Booth 318.
In attendance: R. H. Chadwell, V. N. Duxbury, J. K. Stedman, R. N. MacDonald, A. G. Piece, A. J. Maxfield, W. L. Cummings.
Exhibiting: Weatherall conversion oil burners, residential and commercial; boiler burner units; Weathertherm warm air furnaces.
New Products: Model XLA small residential oil burner; Model ET oil burner with electronic turbulator combustion head.

WEBSTER ELECTRIC CO., 1900 DeKoven Ave., Racine, Wis.—Booth 667.
In attendance: E. M. Ford, S. A. Loeb, B. T. Wiechers, H. B. Hastings, Jr., D. J. Munroe, L. S. Ehrich, P. G. Crewe, H. C. Osborne.
Exhibiting: Fuel pumps; transformers. Thermodrive variable speed-blower control unit.

WILLIAMS OIL-O-MATIC DIV., EUREKA WILLIAMS CORP., 1201 E. Bell St., Bloomington, Ill.—Booths 695 and 794.
In attendance: N. A. Palmer, R. G. Pinkerton, E. H. Davison, W. L. Sneltjes, C. G. Branch, C. Allen Fisk, J. H. Shoemaker, J. E. Nesbitt, L. G. Brown, J. H. Skaggs, S. J. Dowling, Hugh H. Hackett, R. W. Holmstrom, Frank Brown, M. P. Langdoc, W. A. Matheson, Jr., H. E. Earl, R. C. Osborn.
Exhibiting: Oil-O-Matic cast iron and steel boiler-burner units and winter air conditioning units. High and low pressure oil burners and and an oil fired water heater.

YORK-SHIPLEY, INC., York, Pa.—Booths 354-370.
In attendance: S. H. Shipley, M. Landau, H. M. Carpenter, G. E. Athana, G. D. Frank, Jos. C. Hauf, Jr., A. M. Raver, C. A. Fry, R. S. Doherty, C. H. Neiman, R. L. Mohn.
Exhibiting: Complete line York-Heat residential oil heating equipment, including boiler units, winter air conditioners, conversion burners and domestic water heaters; Industrial horizontal rotary burners and SteamPak generators.



sheet metal *Section*

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Clad Sheets—What They Are How They Are Used

Properties & Types

Part I of a Series

RICK MANSELL
Process Engineer
Los Angeles, California

Here is the first article in a comprehensive series which will contain all the essential information about clad metal sheets.

THE idea of using clad metals is not new. Early records indicate that the Egyptians were in the habit of hammering silver onto copper thousands of years ago. Ever since that period, adaptations of that practice have been employed in a wide range of applications. There was Sheffield plate in 18th Century England and tool steel clad on mild steel in 19th Century Germany. During World War II bullet jackets were made of copper clad steel.

Clad steel plate can be defined as a composite material consisting of a commercial grade steel plate, to one or both sides of which there is bonded a cladding of a corrosion resistant metal in an amount representing a reasonable proportion of the total plate thickness. This definition eliminates many types of composite metals and specially surfaced steels. The code specifications for clad steels require a minimum bond shear strength of 20,000 psi and all of the available clads far exceed this strength.

General Description

The principal steels used for the backing are of low carbon analysis. The claddings most generally encountered are the various grades of stainless steel, nickel, Monel, Inconel and cupro-nickel. Other clad metals which are finding increasing application include stainless on copper; silver clad on bronze and mild steel; and strip composed of copper clad on low carbon steel. The clad metal may be applied either to one or to both sides of the base metal. As a general rule, the price of the clad metals is lower than that of the cladding when used alone in its solid form and in addition they are often easier to fabricate.

Solid stainless steels have been used increasingly in the last decade, as various grades were selected to resist corrosion, oxidation, abrasion, heat and pressure. Their use would have expanded much further if high cost had not been such a serious disadvantage. The introduction of clad steels to replace solid stainless steels compensated for this factor and produced satisfactory results at a substantial saving to the user and the fabricator. The desirable properties of the stainless steels were imparted to the more plentiful and less expensive metals.

Thickness Carefully Regulated

In the early development of clad steels there were many difficulties encountered in the bonding processes. Some of the bonds would not hold during fabrication and the thickness of the cladding could not be adequately controlled in a uniform manner. The experiences during the war years when it was essential to conserve chromium and nickel led to substantial improvements in connection with the manufacturing, processing and fabrication. Today, the thicknesses of each solid stainless steel insert and each steel backing plate which make up the stainless clad assembly are carefully predetermined. In this way, there is the assurance of obtaining the required uniform percentage of cladding to total plate thickness in the finished clad steel plate.

The uniformity in thickness of the stainless portion facilitates butt welding by avoiding the hazard of penetrating stainless with carbon steel and creating a low alloy deposit metal. Again, the fact that the stainless surface is not in contact with the oxidizing atmosphere during its manufacturing, rolling, and annealing processes means that the result is a clean surface, free from rolled-in scale and equivalent in quality with solid stainless steel. A sound bond exists between the stainless cladding and the backing material. The 20,000 psi shear strength prescribed in the specifications is assured.

Stainless Clads

Stainless clad steels are available in wide range of specifications but the cladding materials most generally used are the types 304, 316, 347, 410 and 430. The

base metal is usually carbon steel, but may be any low-alloy steel of flange or firebox quality conforming to standard steel specifications. The usual thickness of the stainless facing material is 10 or 20 per cent of the cross-sectional area. However, it is possible to make the stainless portion in percentages from 5 per cent to 50 per cent to suit special service or fabrication conditions. The type and thickness of the cladding are determined by the requirements of each application. Cladding on both sides of the backing is sometimes specified.

Physical Properties

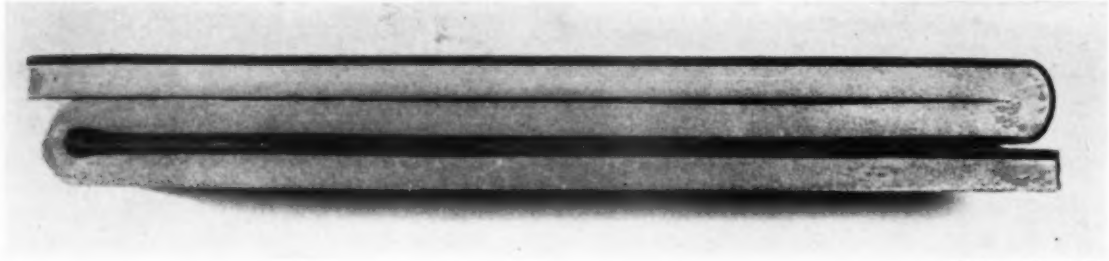
The general physical properties of the composite plate as determined by tensile tests are equal to or better than the minimum requirements of the specifications for the steel base plate used. Stainless clad steels have a great advantage over solid stainless steel in their high rate of heat transfer; the actual efficiency of heat transfer of the clad materials is far superior to solid stainless steel and is almost as good as steel in this respect. Due to the intimate contact between the cladding and the backing material and the adherence of the bond, there is no significant thermal resistance.

There is a strong permanent bond in all the stainless clad steels. No separation of the steel from the cladding occurs under normal conditions of temperature change, pressure, vacuum or mechanical shock. Fabricating operations such as shearing, bending, flanging, forming, riveting and welding are performed in a satisfactory manner. These are discussed in a later article of this series. In shear tests, one type of stainless-to-steel bond has sustained test pressures averaging 48,000 psi.

The clad steels are available in the form of plate, sheet, and strip; some, particularly the copper clads, are available as wire. Some producers also prefabricate such shapes as heads, flanges, and circles. The cladding is usually specified in percentage of total thickness of the complete sheet or plate whether one or both surfaces are clad. The minimum of cladding is between .030 and .050 in. The stresses due to difference in the coefficient of expansion of clad steel components produce no change in shape under 400 F. Distortion tendencies during heating seem to be self corrective both in flat plates and in welded construction.

Carbon steel clad on one side with 20 per cent of type 304 stainless, results in a considerable saving as compared with a solid section of stainless steel. Nickel and Monel clad strips are 30 to 35 per cent cheaper than the solid nickel or Monel while copper clad, mild steel strip sells for about 25 per cent less than the solid copper. The price advantage is even more favorable for clad plates when the types 316 or 347 stainless clads are contrasted with the solid metal. With nickel or Inconel clad plate more substantial savings are effected.

In most cases, particularly when the cladding is only on one side of the base metal, the clad steels are less expensive than the solid sheet or plate of the corrosion or heat resistant material. When the cladding is on both sides, it is quite possible for the clad steel to be more expensive, but even when this does occur special properties may justify its selection. Such attributes as heat conductivity, weldability and other requirements sometimes assume major importance.



Lukens Steel Co.

Here is a convincing demonstration of the flexibility of clad steels. The test piece is stainless clad steel and a complete S bend has been made in the piece with no fracture in the clad surface.

Solid stainless steel is a poor heat conductor but otherwise it would be an excellent material for heating applications. Since it is not efficient as a transmitter of heat, the area immediately over the heat source gets hot while a portion situated a few inches away is much cooler. A compromise is made by the use of a core of carbon steel or copper to diffuse the heat, and then a cladding of stainless on both sides to give a permanent finish. When copper or silver are used as claddings, they are better conductors than any of the backing steels. Clad steels are also useful in those cases where different characteristics are required for each side of a sheet; one surface could be stainless steel while the carbon steel surface could be the backing for porcelain enameling.

Major Users of Clads

For the year 1947, about 12,000 tons of clad metals were used. The major consumers were the heavy process industries. Oil refineries which once specified tanks of 4 in. thick plate to allow for the corrosive action of some oils have switched to 2 in. plate, clad with stainless steel on the inside. Some glass-lined milk storage tanks are being replaced by stainless clad tanks which are less fragile. Clad metals are invading the pulp and paper field where several types of equipment, now tile lined, are being produced of stainless clad. There is a growing use in heaters, heat exchangers, air conditioning, building trim, decorative paneling, ducts, refrigerated cabinets, and in the general field of home equipment.

Types of Cladding

Chromium steel alloys are often used for cladding and of these alloys types 405, 410 and 430 all have excellent resistance to oxidation and corrosion at elevated temperatures. The 14/16 chromium type is more ductile and more easily welded than the other chromiums and also has good resistance to oxidation and corrosion.

The chromium-nickel steels contain between 16 and 26 per cent chromium and from 6 to 22 per cent nickel as the chief alloying elements. They include types 301, 302, 304, 310, 316, 347, and type 321.

Type 301 is a 17-7 chromium nickel analysis steel and is used under comparatively mild corrosion conditions; generally for sanitary and decorative applications. Type 308 is an 18-8 type and has excellent corrosion resistance; finds application in the chemical industry. Type 304 is an 18-8 grade with 0.08 per cent carbon maximum and may be used over a wide range of corrosive conditions without subsequent heat treatment.

Type 309 has a higher chromium and nickel content (25/12) than the basic 18-8 and therefore has superior resistance in a large variety of applications combining heat and corrosion. Type 310 has excellent resistance both to corrosion and oxidation at high temperatures.

Type 316 is an 18-8 steel with higher nickel (10 per cent minimum) content and with the addition of 2 to 3 per cent molybdenum. It is less susceptible to pitting or pinhole corrosion than the regular 18-8 types when exposed to such corrosive reagents as sulphuric and sulphurous acids.

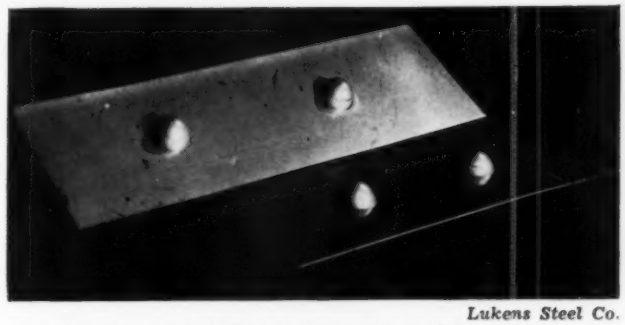
Type 347 is the basic 18-8 analysis modified by the addition of colombium to prevent the precipitation of harmful carbides. It should be used for welded vessels under certain corrosive conditions, or when the service temperature range is 800 to 1600 F.

The last of the chromium nickel steels to be considered here is the 321 type. This is the 18-8 analysis modified by the addition of titanium to prevent the precipitation of harmful carbides. Its properties are similar to those of type 347.

Nickel Alloy Clads

The high nickel alloys include Inconel which is composed of 78 per cent nickel, 14 per cent chromium, and 6 per cent iron; and Monel which is composed of 67 per cent nickel and 30 per cent copper. Commercially pure nickel has an average nickel content of 99.4 per cent. It has exceptional resistance to hot, concentrated caustic soda and has high thermal conductivity. Water boils in it almost as fast as in copper, and its cooling performance is just as good. Nickel is unsatisfactory in contact with nitric acid or other oxidizing acids or salts. It has high ductility both annealed and cold worked and retains its strength to an exceptional degree at high temperatures.

Inconel combines the properties of nickel with the extra resistance of chromium to heat and oxidation. It may be repeatedly heated and cooled from 0 to 1600 F without embrittling. Inconel is superior to nickel and Monel in resistance to alkaline sulphur compounds and hydrogen sulphide at atmospheric and high temperatures. Because of its chromium content, it is also superior in resisting strongly oxidizing acid solutions and dilute organic acids. It is not affected by mixtures of steam, air and carbon dioxide, nor by steam above 800 F.



Lukens Steel Co.

This illustrates an Olsen ductility test of stainless clad copper sheets. In this type of test the machine must break the metal before recording an index of ductility. These sheets did not break until a depth of .550 in. was reached.

Monel is a nickel alloy whose combination of high strength, toughness and immunity to rust makes it a widespread cladding material. Additional favorable characteristics are ease of fabrication, corrosion and abrasion resistance. It is widely used in the handling of common salt, dilute sulphuric acid, cold dilute hydrochloric acid, hydrofluoric and phosphoric acids, and strong caustic soda. It is not resistant to ferric chloride, nitric acid and sulfurous acid.

Even Silver Is Used

Silver and copper are often used for cladding where heat distribution and conductivity present a problem of the application. In the case of silver, even though the cost of producing the clad plate is high, due to the number of times it must be heated during the rolling operation, it is still cheaper to use it as a clad than to use a solid piece of silver. Copper clad steel is used extensively for the transmission of electricity; the copper because of its electrical conductivity and the steel for strength.

Types of Backing Steels

The base metals for clad steels are the carbon steels or other mild steels including the low alloy steels. The steels most commonly used are the flange or firebox qualities. They are identified by ASTM specifications; A285-C; A201-B; A212-B; A203-B; A204-B; and A225-B. These steels range in tensile strength from a low of 55,000 to 65,000 psi to a high of 70,000 to 80,000 psi. The yield strengths average slightly over half the tensile strengths. There are also special types of clad metal combinations. Examples are the copper covered steels and the stainless steel covered coppers.

Copper Covered Wire for Electricity

Copper covered steel wire has been widely used by the electrical industry for a number of years. Apart from its high conductivity, the copper has valuable corrosion resistance properties, while the steel core supplies the strength. Although the initial cost of the copper covered wire is higher than that of galvanized steel wire, its increased life more than offsets this difference. Because of this fact it has been utilized in

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Lead Coated Copper Batten Roof Applied On Masonic Memorial

LAWRENCE E. GICHNER
Washington, D. C.

The imposing structure pictured at the left is the George Washington Masonic Memorial, located in Alexandria, Virginia. This picture story shows how the roof was installed; a roof chosen for beauty and permanence.

BETWEEN the two most noted shrines in America, Mount Vernon, home and burial place of our first President, and the Washington Monument, which this year marks the centennial of the laying of its corner stone, there rises the stately pyramidal George Washington Masonic Memorial, a significant sight that yearly attracts more and more travelers.

The shrine has been decades in the building and final completion is not anticipated for years to come. Yet, what is being built is with an eye to permanence and endurance and because of this fact serious consideration was given to the type of roof to be applied and material to be specified.

Wisely, a lead coated copper batten roof was selected for its inherent beauty and service characteristics.

At first, it was believed the slightly uneven contours of the asphalt and felt roofing over existing surfaces would prevent a final smooth finish, but by the process of spudding off protuberations, lumps underneath were eliminated. Particularly large bulges due to the batten construction blended with the whole aspect of the roof are unnoticed by the casual observer.

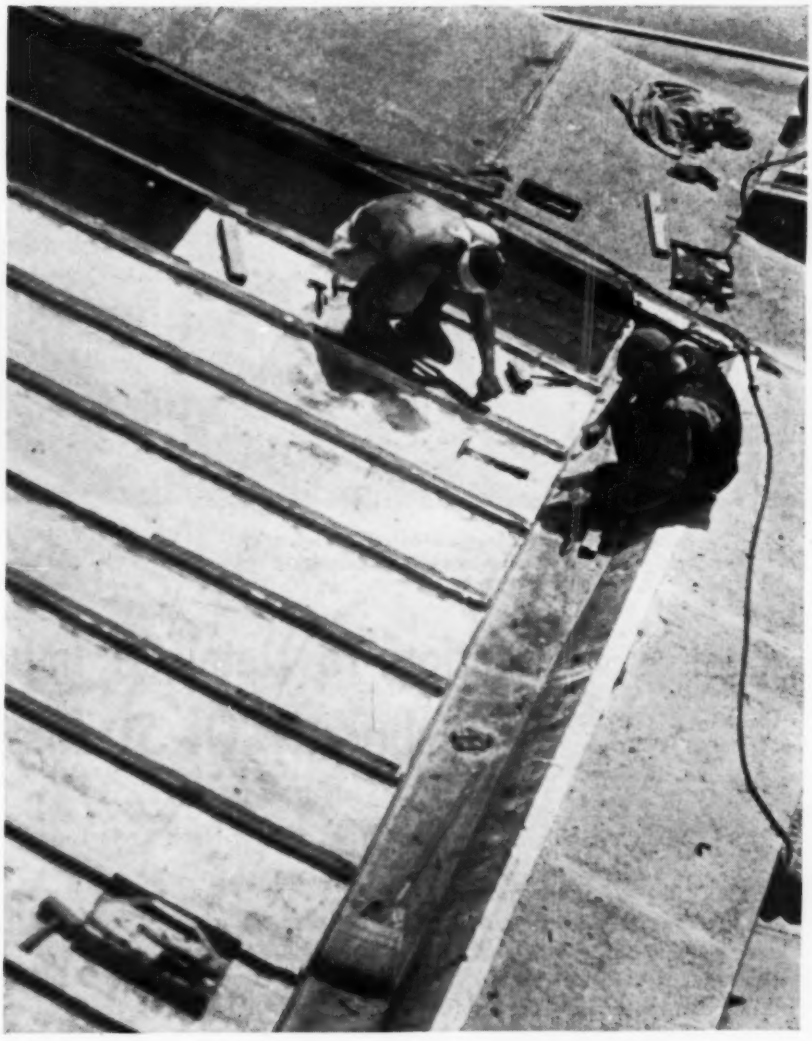
This building condition is only mentioned so that others facing the same situation are not deterred and

This photo shows the materials being hoisted to the job and the reservoir behind the memorial.

This is the back roof where the double pitched roof and the domed roof meet. The spread wing method of applying the battens is clearly shown.

This workman is shown in the process of locking the sheets together, between the battens.

Batten caps are being installed in this photo, as the roof nears completion.



This section of the roof is located at the front of the building and sheets are being locked into place. The author describes an interesting cleating practice that was followed on this roof.

Here one of the finishing touches is being made as the ends are put in place on the battens.

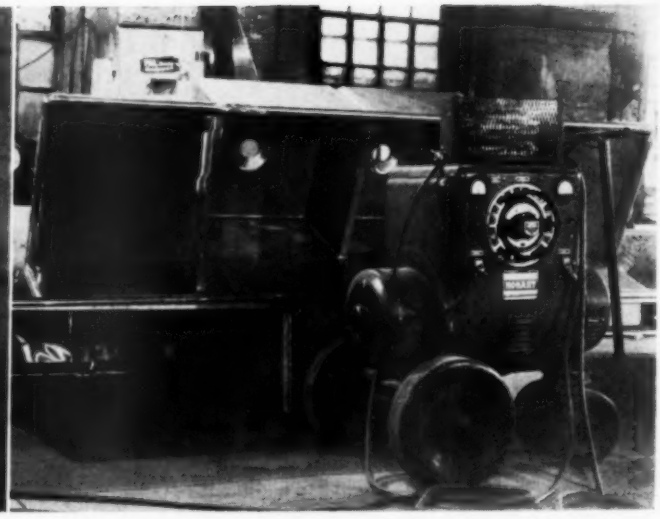
to give them the knowledge that they can solve the problem successfully. Our solution was accomplished by keeping the top of the batten even and chipping out the bottom batten surface to fit snugly in regulation areas.

Two roofs were covered, one front and one back. The front roof was double pitched. Half of the rear roof was double pitched and half was in the shape of a half dome. How to cover the dome portion effectively required some serious consideration. To have all the battens come to a point would have resulted in an awkward construction situation at the peak. A great deal of material would have been wasted by this method.

The spread wing technique was designed by John W. Conway, general manager of Gichner Inc., who engineered the job and his idea was successfully adopted. The spread wing technique consisted of two main ridges going down the dome at forty-five degree angles into which battens ran from two sides. Viewed from balconies above, from which area the roofs are most readily seen, the appearance of the spread wing technique is particularly effective.

Everything was done with an eye to beauty and endurance and an innovation was made with regard to cleating. Standard practice has been to run cleats to the end of the lock seam, but when folded down, this always makes an unsightly lumpy appearance. Experiments were made and it was found this result could be eliminated by cutting the cleat back from the edge and none of its holding qualities were impaired.

On the inside of this cabinet can be seen the diagram of press brake bends which is put on all products requiring press brake work.



Welding has just been completed on the stainless steel double drainboard sink. Material used is 12 gauge.

"Attention To Detail Is Important" Claims Fabricator Of Stainless Steel

R. C. NASON
Great Neck, Long Island

ATTENTION to minor detail is a faculty that is not universal in sheet metal manufacturing plants but it is an outstanding characteristic of the Federal Mfg. Co. of Brooklyn, New York. Custom fabrication of kitchen equipment for mass feeding is the principal business of this company.

One example of this attention to detail is found in the case of steam table water pans. For many years these pans have been produced of copper that was subsequently tinned on one or both sides. The firm we are discussing fabricates these pans from 16 and 18 gauge stainless steel and only uses copper if specifically requested. Pans which are to be placed directly over gas burners are protected by the addition of reinforcement plates of 16 gauge stainless steel at the point the flame is to strike. It is probable that the addition of details like these has played a part in the development of this company to a point where it employs 125 sheet metal mechanics and occupies a building that is 20,000 sq ft in area. This growth has taken about 25 years.

These are restaurant serving counters in production. They are faced with Formica plastic backed up with galvanized steel and are easily replaced.

Stainless Steel Is Popular

Many manufacturers of sheet metal products do not pay any particular attention to the feet on cabinets and tables; they are often made of cast iron, sometimes nickeled, but frequently just painted. Federal makes the legs and feet for their products from sand-cast nickel silver. They are then buffed to a high polish and are sometimes adjustable for different heights. The base rails for lunch counters are provided with bell-shaped feet, which make it possible to level the counter. Even parts like this are highly polished.

Most of the fabrication done by this company is in stainless steel of gauges from 12 to 16 and it has been found that there is less need for interior framing and bracing when these heavier gauges are used. Vertical and horizontal members can be at least 20 per cent farther apart without danger of sheet surfaces warping. The extra material cost caused by the heavier gauges is said to be offset by the lighter framing that can be used. This company has found that the heavier gauges improve the appearance of the work, are popular with customers and so help to boost business. Federal makes a point of adequately protecting the finished surfaces of its products, after they are completed and ready for shipment. This is a very impor-

tant detail in handling stainless steel.

Most dishwashing sinks have openings for disposal of food scraps and in many cases these openings are lined with metal. Federal uses deep, moulded rubber fittings on these openings so that careless employees will not damage china when scraping refuse prior to washing. Without the added protection of this rubber collar a great deal of china can be ruined very rapidly. Sinks that are designed for washing glasses are fitted with similar rubber collars.

Hospital food carts are made at this plant and are fitted with ball bearings and rubber tired wheels. It is essential for these carts to move easily since they are frequently loaded very heavily when in use.

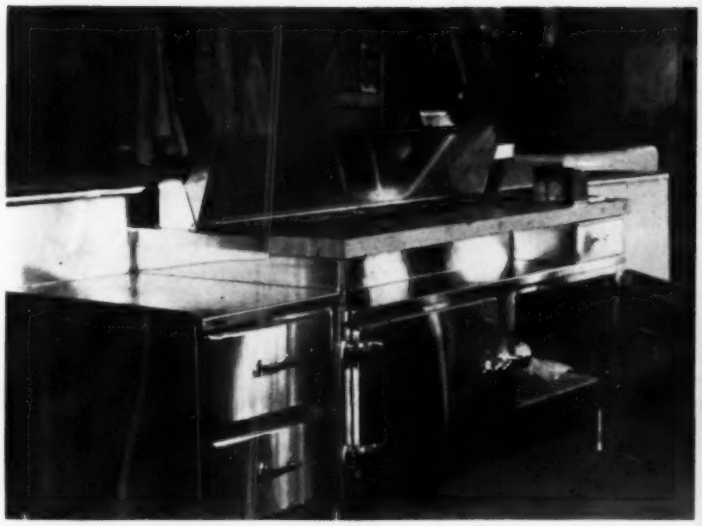
Products Are Engineered

Federal has a large engineering department and all products are carefully developed by that department. When the plans have been turned over to the shop the foremen are in full charge. They do all layout work and the mechanics are all specialists who do one job and stay with it. This specialization tends to increase efficiency.

When the foremen lay out the pieces to be fabricated they include a visualization of the completed assembly on all blanks. All the operational information, degree of bend, etc., is also marked on the blank. This practice eliminates confusion, prevents scrap and wrong bends and reduces production time.

Arc Welding Used

Arc welding is used almost universally in this company for all fabrication. Eight portable arc welders are spotted about the shop and they are used as needed with no provisions for shields or curtains. This saves time for the welders and does not actually interfere with the other workers; in fact, it tends to make them keep their mind on their work, if they look around much they will be looking at open arcs. The welding done here produces very little smoke since most of it is on stainless steel. Welding smoke is more common to ordinary steel, galvanized steel and dirty parts; stainless steel is clean and usually stays clean and so it does not produce much smoke.



In the text will be found a description of this stainless steel sandwich serving counter which is complete even to refrigeration.

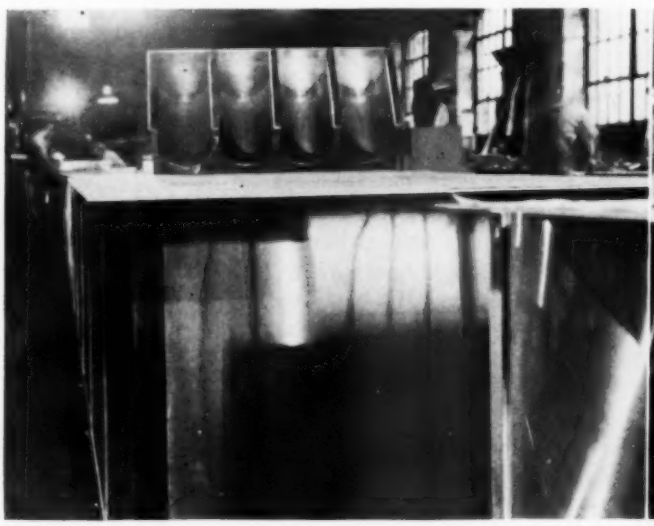
The Federal company favors a policy of having a few large customers rather than many small ones. In fact, chain restaurants, chain hotels and the Federal government are the major customers of this firm. Organizations of this type are always building new kitchens or remodeling old ones, and so there is a constant source of business. One project under way at the time of our visit was a complete kitchen of Monel metal for an army base hospital.

Also in process was equipment for a restaurant in a railroad station. The food counter fronts being made for this job were faced with Formica, a durable plastic which is very resistant to food and beverage stains. Strips of stainless steel hold the plastic to its backing and also double as trim. The owner of the restaurant decided that in the long run it would be cheaper to replace the Formica than the stainless steel that might have been used. Behind the plastic is 16 gauge galvanized steel, welded to angle irons and channels.

In one of the illustrations can be seen a stainless steel sandwich counter which is a complete unit for

(Please turn to page 178)

Resting on a cabinet, below, is one of the handy flatware bins manufactured from stainless steel by Federal.



The two products on top of the cabinet are a drinking water unit for a hospital and a bread box (lid is open).

Scientific Shop Layout (VII)

ERNEST E. ZIDECK
Sheet Metal Consulting Engineer

The seventh of a series designed to present the latest in shop layouts and techniques for efficient production to our readers. The author's experience in sheet metal design and production has enabled him to show step-by-step the way in which a sheet metal shop can be made to operate most effectively and economically.

IN THIS installment of Shop Layouts are four drawings each pertaining to a particular shop. The first represents, on a small scale, Plant D of the Goodyear Aircraft Co., located at Akron, Ohio. The furnace shop, Fig. 2, is shown as it appeared after reconversion from making small parts for aircraft to its pre-war work. Similarly, the shops in Fig. 3 and Fig. 4, are shown in their post-war status, the first doing general sheet metal work and the other doing roofing and gutter work. Each of the shops have retained the arrangements introduced when they were engaged in producing for the war effort.

Plane Construction

Commencing with Fig. 1, we see the ground floor of a newly erected building, especially planned for the production of the Navy Corsair. This production, except for the mounting in the plane of the motor, the guns, the controls (electrically or hydraulically manipulated) and the wheels, consists of sheet metal parts fabrication and sheet metal parts assemblies. The sheet metal is ninety-five per cent aluminum alloys and five per cent other metals, ranging in thicknesses from ¼ in. to almost .005. The heavy wing members and forward section of the plane are riveted together in parts, so that the metal thickness in these parts increases to ½ in. The great number of ribs and struts forming the plane skeleton and the wings are part extruded shapes and part brake-formed shapes. The other components are either brake-formed or shaped in a hydro press, with outside surfaces and motor housing formed in rolls and other sheet metal working machines. Assemblies are by spotwelding, flame welding, riveting, and bolting. All of this work is sheet metal work and is done by patterns, by shearing, interior blanking, forming, fitting, alignment and fastening of pre-assemblies, and the final assemblies.

In planning the building, space for the sub-assemblies and for the final assembly was the prime consideration. Accordingly, the entire ground floor was reserved for production, assembly and mounting work, and the accommodation of the hundreds of workers. But inasmuch as a plane requires not only lateral space but also height, the building was made two stories high at the sides, with a slight rise in the section of roof over the central portion of the building. This central portion, located between the cafeteria and the heat-treat room, has steel frame work supporting the roof, and a traveling crane covers the area. Offices and drafting rooms, lighter work departments servicing the ground floor, and departments not directly productive, all were located in the two second stories at the sides of the building, these stories supported in part by columns flanked by the machines in the sheet metal shop proper.

This building design is interesting because it may be adopted for other sheet metal production. In many shops doing air conditioning, industrial sheet metal and architectural work, the advantages of a high ceiling are recognized. Light coming into the shop through skylights also has its advantages. But in climates requiring heating of the shop there would have to be a ceiling under the roof, with the skylights extended through the ceiling. With the offices and service rooms placed in second stories flanking the shop proper, accessible by stairs from side entrances shown in the drawing, the building could be hemmed in between other existing buildings on a busy street, with the shop occupying the whole floor area of the available building site.

Advantage of High Roof

For larger fabrication, especially of bulkier units, this shop design might prove better than one spreading the offices and non-productive departments upon the ground floor. That is a matter of choice, however, and here the design is shown as another example of shop planning, among many. Where it is necessary to have overhead conveyors, for lifting and moving bulky assemblies, the high ceiling (or roof) will be a requirement; and in such cases the placing of parts production and lighter work at the sides of the assembly-shop, with the offices and the non-production departments elevated and looking down into the shop, may be a good solution of the problem. A sky-lighted shop also calls for a high ceiling or roof above, as the light from the skylights will spread, lighting the whole

Fig. 1 Sheet metal work in aircraft plants.

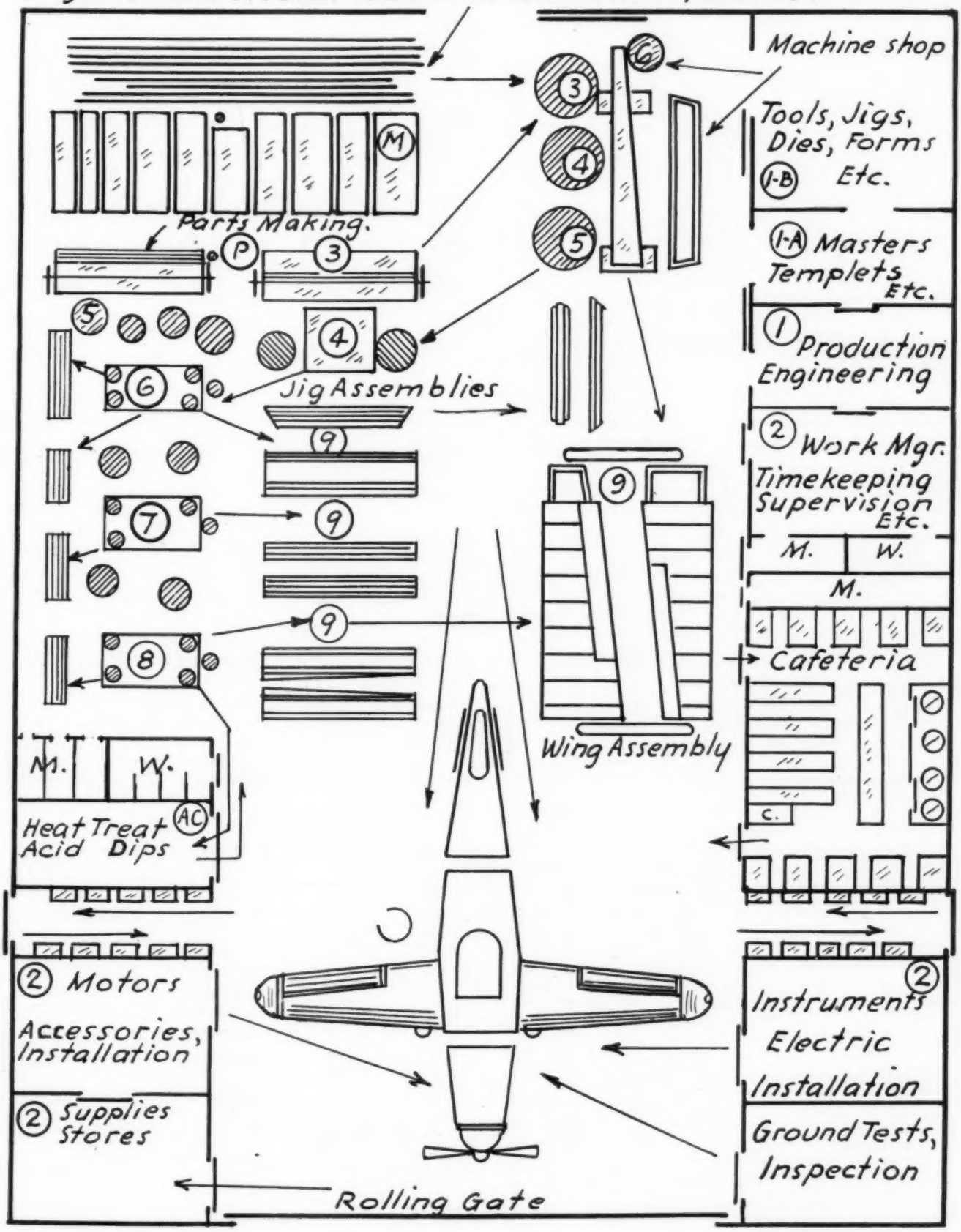


Fig. 2

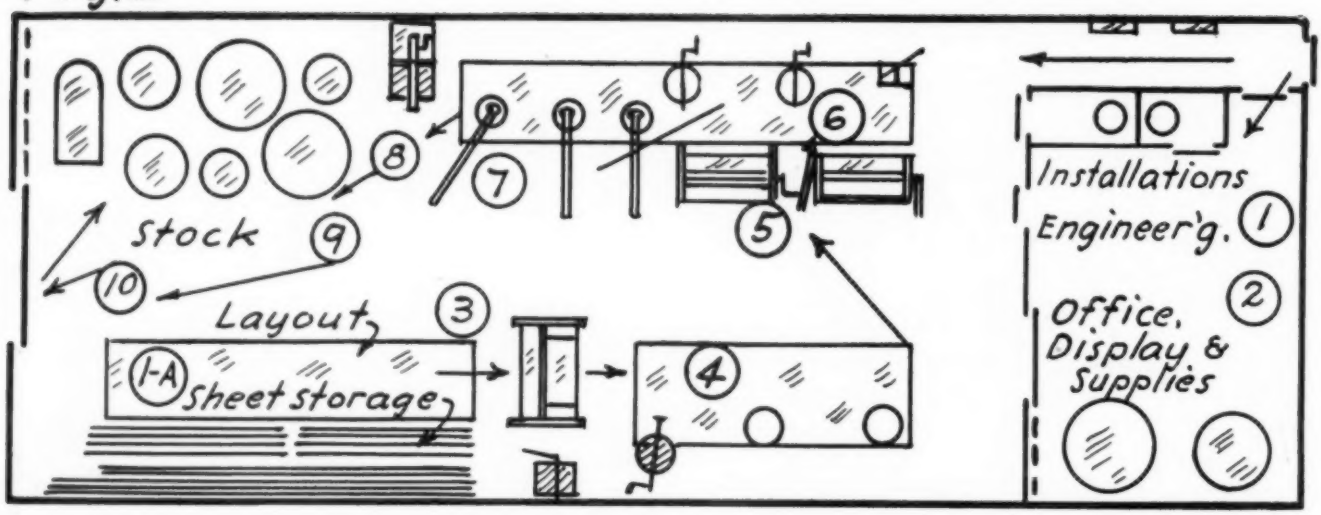


Fig. 3

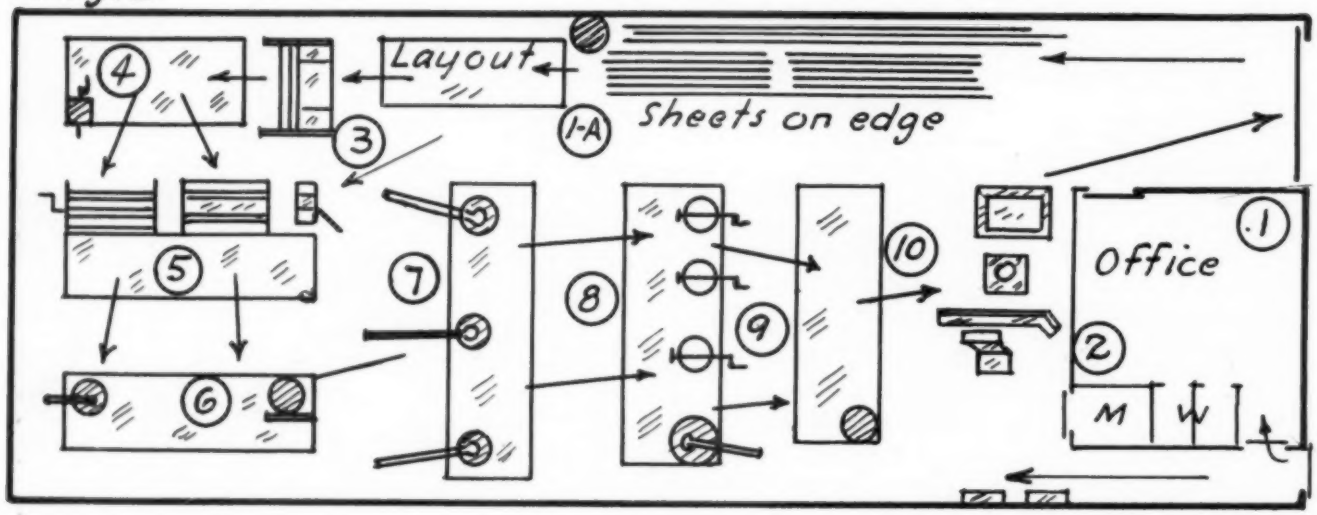
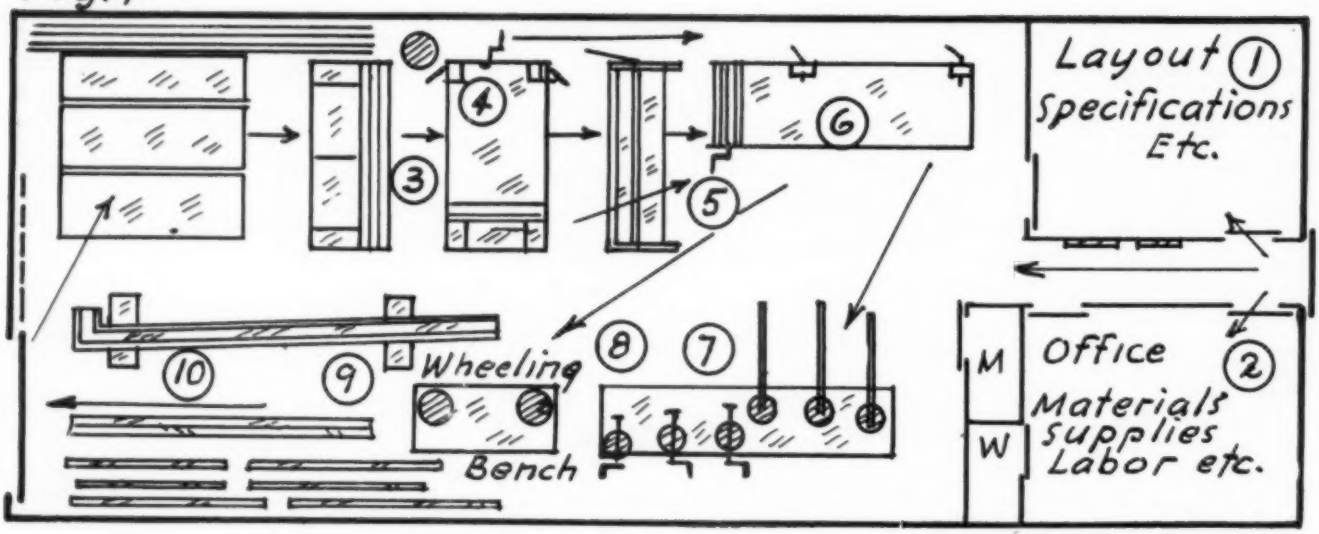


Fig. 4



shop, while a skylight in a low ceiling will light only a limited area.

As in a number of other shops shown in this series, raw materials are received through a trucking entrance and stored adjoining this entrance; shearing is placed near the material *3;* preparation of the sheared blanks follows in line, *4;* forming in the brakes is at left, *5;* and then fitting *6*, binding *7*, and finishing for sub-assemblies *8*, keep up the line, with sub-assembly *9*, nearby. In aircraft production there is some heavy fabrication required, and we see this work performed at the right from the stored materials, at *3, 4* and *5*. Here the hydro press forms parts which cannot be handled in the brakes and rolls. Parts from this section are returned to *4* across the aisle, for processing along the line and along with the parts coming from the brakes and the rolls. In this production, aircraft, assembly work (including riveting and bolting) predominates; and at a number of locations there are special jigs and assembly fixtures in which the work is done.

In presenting drawings of shops, we pay especial attention to the arrangement of departments or operational sections designated by the numerals 3 to 10. In no drawing in this connection is it intended to show any particular tools or machines or the number of them; and neither are the other facilities and equipment drafted to correspond to their actual nature and numbers. The drawing shows the plan of the shop, with each sub-section in its most advantageous place. The drawings call for careful perusal, for ascertaining the respective meaning of a number or letter from the text, and then visualizing sheet metal production; in this way getting the details and overall coordination of shop procedures. At the bottom of each of these shop layouts is planning which would eliminate the movement of raw materials deep into the shop and the movement of sheared materials and processed parts interfering with any other operation, wasting time and delaying production. In addition, offices, drafting and patterns, rest rooms, accessories and tools supplies are planned with the same objects in view.

These Shops Are Typical

In Fig. 2, 3, and 4, are shown sheet metal working shops of which there are hundreds in towns and cities in all parts of the country, and principally in the older cities of the eastern and southeastern United States. The buildings in which the shops locate are on busy streets, with shops of other trades and neighborhood stores adjoining. The buildings are old, occupying lots of about thirty feet in width and extending from the street to the alley. Frequently there is another story above the shop or store, with living quarters for the owner. Sometimes there are shafts extending from the ceiling of the ground floor room or rooms to the roof, admitting light from smaller skylights, but in most cases daylight comes in through glazed fronts and large windows facing the alley, located high above the ground and barred or screened.

These shops are roomy enough for accommodating equipment, supplies, displaying products, and employing a dozen men. But on our visits to these shops, we find many of them cluttered up with all kind of useless paraphernalia. Then there is old, useless machinery on hand; and the walls are often decorated with innumerable sheet metal patterns, some of which date back to the tinsmithing era.

The three shops shown are depicted as they had been transformed, during the war, for production of small parts and utensils in connection with marine work, interior work in shipbuilding. This work consisted largely of messhall equipment, oil pans, smaller machine guards and diverse containers. In each case it was necessary to clear the shop of old accumulations, store away the unused equipment and do a general housecleaning, particularly to get more light through the front and rear glass. In each case the front office was left intact, but the partitions facing into the shop were provided with glass. Also, the rest rooms had be remodelled.

Individual Shop Descriptions

The shop in Fig. 2, originally a furnace shop and returning to that work after the war, is shown as it was arranged for production of pans and containers for ships. Materials and incoming stock occupy the rear of the shop near the trucking entrance; a layout bench is placed near the sheets and adjoining the shears, *3*; the preparation bench *4*, follows in line. The prepared parts are handled across the aisle to *5*; parts-fitting *6* adjoins the brake and rolls and seaming-riveting stakes *7* follow. Finishing *8* and assemblies *9* and *10*, are located near product storage for product shipment through the rear entrance. Work starts in the rear at one side of the shop, progresses in sequence of operations to the shop's front, transfers to the other long side of the shop, and flows along that side to the rear, where it is completed. No materials and no work in progress interfere with the other, nor do operations require haphazard traveling through the shop.

The shop in Fig. 3 has no rear entrance, and materials are received, and finished products delivered, through the front. Accordingly, the flow of work commences here in the front of the shop *2-A*, layout; shearing *3;* blank preparation, *4;* transfer to the other side of the shop, forming, *5;* and progresses in sequence of operations, to the front of the shop and to delivery, as indicated by *6* to *10*. Here, too, there is no crowding, the operations continue in sequence from the front entrance to the rear of the shop along one long wall, and returning to the front of the shop along the opposite long wall. Owing to the length and bulk of the product handled here, the benches are taking up much space, but at no time is there interference of one operation with another.

The shop in Fig. 4 is conditioned for still longer products, such as gutter and spouting, and benches are at a minimum, leaving free space for handling the work. There is a rear entrance, and sheets are stored near it, as shown. Again the operations *3*, shearing *4*, blank preparation *5*, forming; and *6*, fitting; are lined up along one wall, with *7*, seaming-riveting etc., across the aisle and *8, 9, 10*, assembly, soldering and product finishing, ranged in succession along the opposite wall. Soldering pots are mounted on a wheeling bench, with flexible hose connections for gas supply. This shop has a layout room in the front portion of the shop, located away from the activities of production proper, as it should be.

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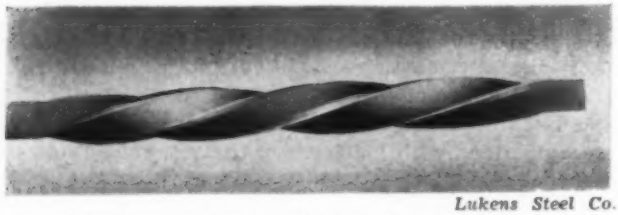
the architectural field where resistance to weathering is a major factor.

Baskets made with the copper covered steel wire have excellent corrosion resistance. Wire fences made of this material eliminate the costs of yearly painting. Wire for railway signal systems must have not only good strength and good electrical conductivity, but also must have sufficiently high resistance to withstand the corrosion induced by moisture and combustion gases. Here again, the composite wire has been found very useful.



Lukens Steel Co.

This shows an extreme twist test of a strip of stainless clad steel. The strength of the bond is apparent.

Copper Clad Tie Rods

The usual masonry cavity walls are constructed of either brick, tile or concrete blocks. In their erection, tie rods are used to bind the inner and outer walls. The rods are inaccessible after the wall is built and for this use copper covered steel wall ties have won wide acceptance, due to their corrosion resistance. Again, copper covered steel pipe hangers are ideal for the support of copper spout and flashing. They do not corrode and thus there is no loss of strength leading to sagging, neither is there any streaking of wall surfaces due to rust stains.

Stainless Steel Combines With Copper

A type of clad metal which is receiving increasing application in industry is the combination of chrome-nickel grades of stainless steel clad to a copper interlayer. Copper has excellent heat diffusing characteristics, but is softer, more subject to corrosion and more difficult to keep clean and bright than stainless steel. While stainless steel is harder and more corrosion resistant than copper, it suffers from the disadvantage of possessing low heat diffusing properties.

This clad metal combination is able to utilize the advantages of both copper and steel without suffering from their disadvantages. The ratio of thickness of stainless to copper varies according to the requirements. Copper clad with stainless steel on both sides is now being produced for domestic, institutional and hotel cookware; for such commercial installations as steam jacketed kettles, evaporators, heat exchangers, cooling equipment, and for other applications where heat transfer and corrosion resistance are important considerations.

Neubecker— Three Piece Transition Offset

(From page 89)

Now with a radius equal to the dotted line *8-2* in the true lengths and *8* as a center, draw a short arc near *2°* and intersect this arc with a radius equal to the division *1°-2°* in the pattern for the round piece, using *1°* as a center for the latter. With a radius equal to *8-3* in the diagram for solid line true lengths and *8* as center, draw a short arc near *3°* and intersect this arc with a radius equal to the division *2°-3°* in the pattern for the round piece using *2°* as a center. Now take the distance *7°-8°* in the side elevation or *7°-8°* in the pattern for rectangular piece (both being similar) and using *8* as center draw a short arc near *7°* and intersect this arc using *3°* as a center with a radius equal to the true length of *3°-7°*. With a radius equal to the true length of the dotted line *4°-7°* and *7°* as center, draw a short arc near *4°* and intersect this arc with a radius equal to the division *3°-4°* in the pattern for the round piece. Using *7°* as center and the true length of the line *5°-7°* as a radius, draw a short arc near *5°* and intersect with an arc struck from *4°* as a center and the division *4°-5°* in the pattern for round piece as its radius. With a radius equal to *5°-7°* in elevation and *5°* as a center draw a short arc intersecting the center line of the transition pattern and intersect this by an arc struck from *7°* as a center with a radius equal to *7-a* in the rectangular section. Connect all points to outline the half pattern for the transition piece. For the full pattern reverse the half pattern on the center line. Laps must be allowed for riveting and seaming.

Paul L. Biersach

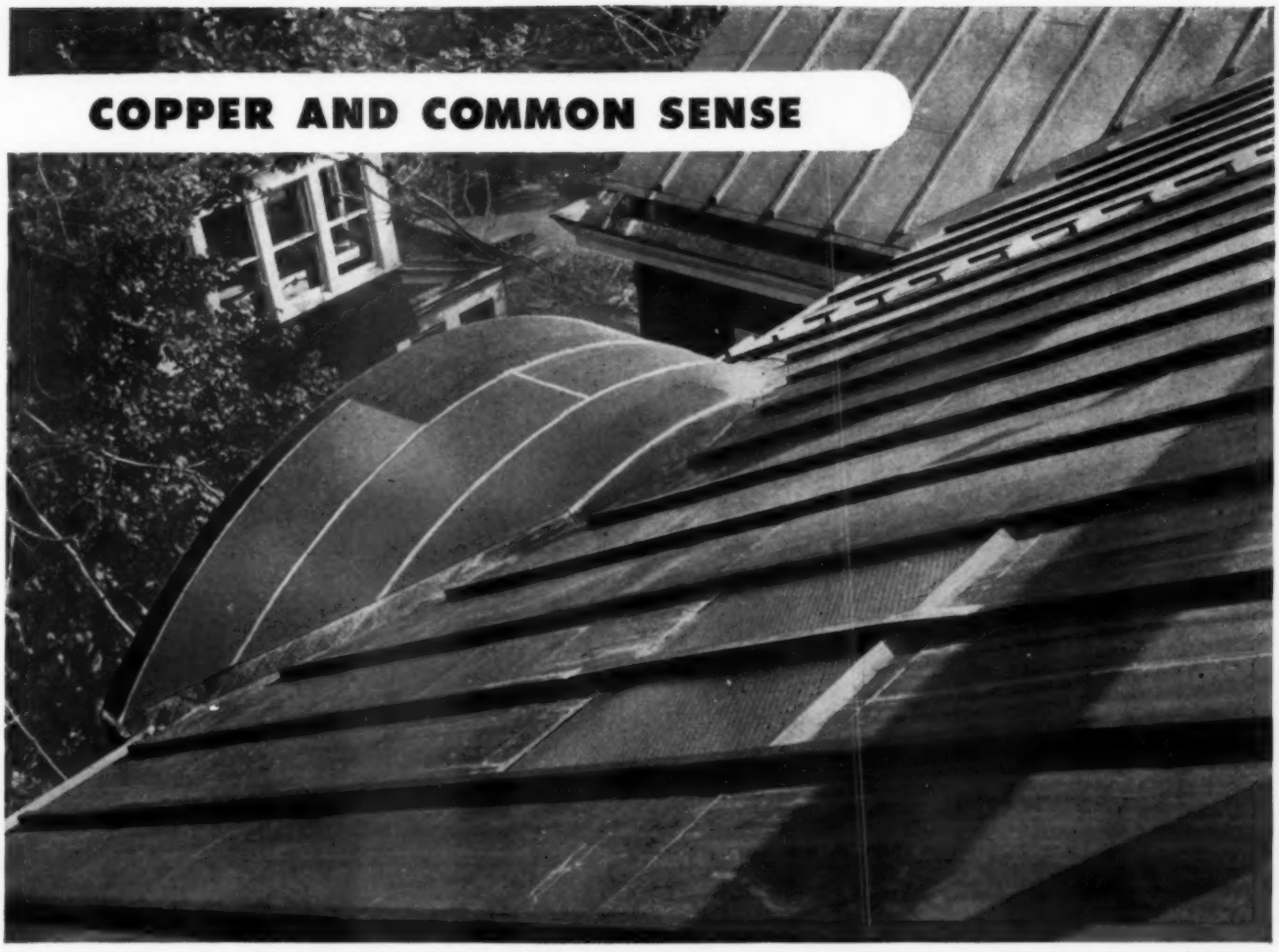
1871 - 1949

Founder of the Milwaukee and Wisconsin sheet metal contractors associations and an early president of the Sheet Metal Contractors National Association, Paul L. Biersach, age 78, died on March 24, at his home in Milwaukee, after suffering for almost a year from a heart ailment. Mr. Biersach organized the state and local associations about 35 years ago and was secretary of the Milwaukee group for 35 years until he retired a year ago. He was president of the state association in 1921 and of the national association in 1929.

Mr. Biersach was 16 when he began working for the Biersach and Niedermeyer Company, a sheet metal firm of which his uncle was president. He started as a bookkeeper and later became secretary of the firm. In 1907, he and John Bogenberger formed the Consolidated Sheet Metal Company, in which he sold his interest in 1926. In 1925 and 1926, he was president of the Builders' Exchange of Milwaukee. Previously, he had served on the Board of Directors of the Exchange. He also served as president, vice president, and treasurer of the Washington Park Zoological Society.

Survivors are his widow, Ella, two sons, Frank J., of Evanston, Illinois, and Herbert F., of Green Bay, Wisconsin, and one daughter, Mrs. Harriet Hopkinson, of Washington, D. C.

COPPER AND COMMON SENSE



Architect: Jens Fredrick Larson, New York; Contractor: O. A. Petersen Construction Co., Montclair, N. J.; Sheet Metal Contractor: Moeltner Company, Montclair, N. J.

ANOTHER LASTING ROOF OF REVERE COPPER

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Revere copper for roofs, flashings and gutter linings is the common sense choice whenever you want *extra* years of service. Not only is copper the most enduring of all the commonly used sheet metals when exposed to the elements, but the Revere Research Laboratories have developed design and installation data that help you provide the very finest sheet copper construction.

Whenever you are faced with a problem concerning the design or installation of copper, look first to the Revere sheet copper manual entitled "Copper and Common Sense"; and if you do not find the complete answer there, the Revere Technical Advisory Service, Architectural, will be glad to help you. The chances are that they have already had experience with a similar problem. In any case, they'll do their best to help solve yours.

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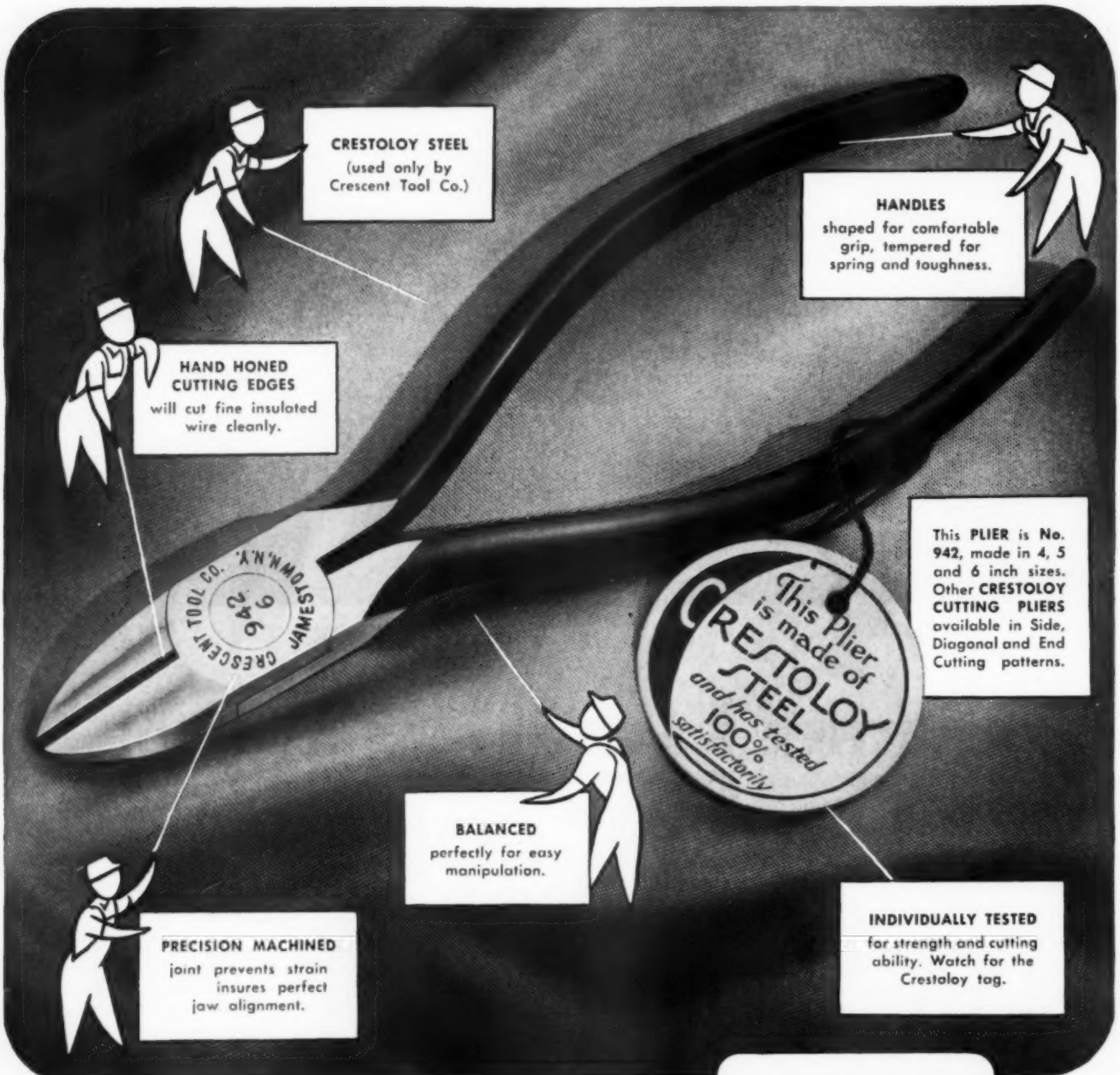
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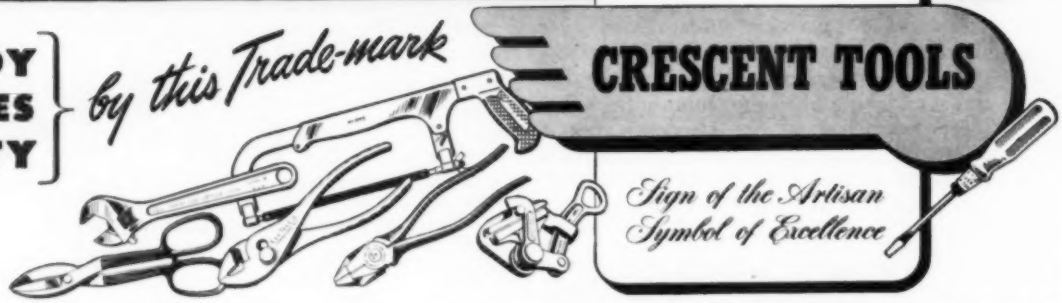

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Canada

At the annual meeting of the Canadian Chapter of the National Warm Air Heating and Air Conditioning Association, held in Quebec City, December, 1948, membership at the end of the fiscal year, September 30, 1948, was reported as follows:

Manufacturers Div.....29 members
Jobbers Div.....11 associate members
Heating Contractors Div.....447 associate members

In the five month period ending February, 1949, 95 additional dealers have taken out associate membership, bringing the number of members in the heating contractors division to 542—an increase of 21 per cent. Associate members in the jobbers division now total 13. One additional manufacturer member application was also approved by the Board of Directors.

The 1949 schools program of the Canadian Chapter, National Warm Air Heating and Air Conditioning Association, got off to a flying start with schools in Winnipeg, Manitoba (January 17-21) and Regina, Saskatchewan (January 24-28).

Both of these schools were of five-day duration in order to include a day and a half study of Manual No. 9 for buildings of more than 120,000 Btuh loss.

The Winnipeg school was under the chairmanship of Mr. O. J. Hatch and was held at the I.O.O.F. Hall with 35 delegates in attendance. F. W. Taylor, chapter engineer, was in charge of the lectures.

The Hotel Saskatchewan was host to the Regina school which was attended by 38 delegates. Harry Mitchelson assisted F. W. Taylor with the lectures at this school.

The chapter's Western Canada dealer training program for 1949 was brought to a close with schools in Calgary, January 31 to February 4, and in Vancouver, February 7 to 11. Thirty-nine delegates attended the Calgary school, where Tommy Fleming was the local chairman. O. J. Hatch, of Winnipeg, assisted F. W. Taylor with the lectures. Norman Smith addressed the group on "Automatic Controls for Warm Air Heating."

At Vancouver, there were 32 delegates in attendance. W. Gushue was local chairman in charge of arrangements for the school, and Ken Dinham assisted Mr. Taylor with the program. Jeth Minaker presented the lecture on automatic controls.

The regular Toronto advanced school was held at 22 College Street, February 21 to 24, and was attended by 58 delegates, a record enrollment for the current school program. J. F. Mitchell, a member of the Technical Advisory Committee, assisted with the lectures and class problems.

At the Chatham, Ont., school, held March 7 to 10, 26 delegates were in attendance. J. F. Mitchell and H. G. Hill helped with the lectures. L. B. Patterson and D. Maynard, associate members in Chatham, attended to local arrangements.

COMING EVENTS

Apr. 21-23—22nd Annual Convention. Hotel New Yorker, New York City. New York State Society of Professional Engineers, Inc., 1941 Grand Central Terminal, New York 17.

Apr. 22-23—Roofing & Sheet Metal Contractors Association of Florida, 27th Annual Convention. Robert Richter Hotel, Miami, Fla. Ellard G. Kohn, P. O. Box G, Little River Station, Miami.

Apr. 29-30—New Jersey Society of Professional Engineers, 25th Annual Convention. Essex House, Newark, N. J. James M. Neri, chairman of committee on exhibits, 86 E. State St., Trenton 8, N. J.

May 5-6—Seventh Annual Anthracite Conference. Lehigh University, Bethlehem, Pa. Anthracite Institute, Wilkes-Barre, Pa.

May 9-11—Sheet Metal Contractors' National Assn., Inc., Annual Convention. Wadman Park Hotel, Washington, D. C. Joseph D. Wilder, Executive Secretary, 170 Division St., Elgin, Ill.

May 9-11—Liquefied Petroleum Gas Assn. Annual Convention and Trade Show. Palmer House, Chicago, Ill. Howard D. White, Exec. Vice President, 11 S. LaSalle St., Chicago 3, Ill.

May 16-20—Oil-Heat Institute, Inc., National Oil Heat Exposition. Mechanics Hall, Boston, Mass. A. E. Hess, managing director, 6 E. 39th St., New York 16, N. Y.

June 2-12—Fourth Annual Construction Industries Exposition and Home Show. Pan-Pacific Auditorium, Los Angeles, Calif. Sponsored by 13 construction industry associations and the Los Angeles Chamber of Commerce. D. D. Durr, executive vice president, 315 W. 9th St., Los Angeles.

June 17-18—The Carolina Roofing and Sheet Metal Contractors' Association, Annual Convention. Ocean Forest Hotel, Myrtle Beach, S. C. Salem Forsythe, secretary, Capitol Roofing Co., Raleigh, N. C.

June 21-22—National Warm Air Heating and Air Conditioning Association, Mid-Year Convention. Edgewater Beach Hotel, Chicago, Ill. George Boeddener, NWAH&ACA, 145 Public Square, Cleveland 14, Ohio.

Row I, T. I. Byrd, Don Malcom; Row II, J. H. Wright, W. A. Matheson; Row III, W. C. Robbins, George Boeddener; Below, W. J. Baak.

1949 Officers

R. W. Spragg, Columbus	President
W. E. Bogen, Columbus	Vice President
W. C. Lumm, Toledo	Secretary
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Ohio Convention Talks of Contractor Problems—Asks Ban on Utility Retail Sales

MORE than 200 registrations were handled at the 1949 convention of the Ohio Sheet Metal Contractors Association held in Dayton, March 7 to 9. Not only did this attendance set a new record but there was general agreement that a new high in fellowship and information was achieved by this meeting.

Registration for the convention opened on Monday morning, March 7, and the first meeting was held in the afternoon and called to order by E. D. Busch, Dayton, chairman of the convention committee. After a brief welcoming speech, Mr. Busch introduced Philip C. Young, Cincinnati, president of the association, who also greeted the group and then appointed the committees needed to carry out the purposes of the convention.

First speaker on the afternoon program was Elden Hauch, Springfield, who brought up the subject of a bill currently in committee in the Ohio legislative assembly that would bar the public utilities of the state from functioning in the retail sales field. This would include heating equipment and would prevent them from installing gas heating systems in Ohio. Mr. Hauch told of the growing support for this measure and he wanted to urge everyone present to help organize committees to take steps to assist its passage.

Night Air Cooling

T. I. Byrd, sales manager of Lau Blower Co., was the next speaker on the program and he talked on summer cooling, particularly night air cooling. Mr. Byrd traced the rise in popularity of this type of cooling and then discussed the market potential for the product. He described methods of selling fans for new houses being built and advised that a fine means of providing future business is to have the building contractor plan for an attic fan installation, even if a fan is not sold when the house is completed. By planning for the installation in the construction of the house, it is possible to keep the cost down to a minimum, thus enhancing the sales appeal of the product.

The other major market for night air cooling is the old house market and the usual means of canvassing are applied in this case; direct mail and advertising, phone canvasses, and house to house selling are all used. The speaker recommended a live demonstration as one of the most effective sales approaches in the marketing of attic fans. When the prospect is able to feel the effects of the fan in his own house it is much more impressive than a salesroom demonstration. Mr. Byrd concluded his talk by telling how to recruit a sales staff for the months in which a peak sales effort should be made.

Monday evening the Salesmen's Auxiliary sponsored a cocktail hour, buffet lunch, and floor show that was

enthusiastically received. Lee Gillespie, Cincinnati, performed his traditional role of master of ceremonies.

Tuesday morning, March 8, the convention was formally opened with an invocation and then a formal welcome to the city by Mayor Lohrey of Dayton.

Don Malcom, Armco Steel Corp., led off the morning speeches with a discussion of the profit opportunities that can be secured by the sheet metal contractor through using stainless steel. The availability of stainless steel was cited as one of the attractions that it offers and the speaker went on to list the other sales advantages that are claimed by the manufacturers of this metal. The various physical properties of stainless steel make it suitable for specialized applications as well as many uses common to other metals.

Mr. Malcom advocated the use of stainless steel around the sheet metal shop, outside for signs and fronts, and inside for paneling. This application will indicate to the customer that he has come to the right place to have stainless steel work done. Then, too, it is important to have the shop clean when handling this particular metal, since its finish must be preserved. Complete records of cost are also important when handling a premium metal like stainless steel.

Profitable applications of stainless steel were described by the speaker in concluding his talk and he emphasized a new use, roof drainage, that has recently been coming into prominence.

Built-Up Roofing

J. H. Wright of Philip Carey Mfg. Co., spoke next on the topic of built-up roofing products and their application. He led off by describing the various products that are used in built-up roofing and advised the selection of the best available materials as the wisest course. In this regard he had a word of caution, because the materials used may be the finest obtainable, but if their application is not correct the finished roof will not be satisfactory. The proper handling of materials prior to application is essential and oddly enough, moisture is the greatest danger to the raw material.

Mr. Wright brought out the point that the specifications for the roof must be suited to the roof itself, if the application is to be a successful one. The condition of the roof, no matter what type, must be checked before applying the roofing or some flaw in the roof deck may cause a failure in the roofing. The speaker then gave a number of good, practical tips on applying built-up roofing in order to secure the best possible results.

Last speaker on the morning program was W. A. Matheson, former executive vice president of Eureka Williams Corp., and his topic was "Putting Your Best Fuel Forward." In his usual dynamic fashion Mr. Matheson invaded one of the strongholds of gas heat to advocate the use of oil as a popular and profitable fuel. He described the manner in which the oil industry had solved the problem posed by the oil shortage of last year and cited figures for 1948 to show that it was the third best sales year in oil heating history. He used statistics to prove the popularity of warm air heating and brought out the fact that a majority of oil burner applications are in warm air heating systems.

The increasing price consciousness on the part of the prospect indicates a need for strong, creative selling by the contractor. Mr. Matheson defined strong selling as that selling which emphasizes value as opposed to weak selling which plays up price. Some sales figures were quoted which showed the history of the rise in popularity of oil heat and another fact noted was that 90 per cent of the sales of oil burners are in the range of 50,000 to 125,000 Btu, the domestic sizes. The speaker told of the OHI goal of 550,000 oil heat installations for 1949 and offered some points by which to judge a manufacturer when seeking a franchise in oil heat.

The Tuesday afternoon session opened with an address by W. C. Robbins, Reynolds Metals Co., on the application of aluminum to roof drainage equipment.

(Please turn to page 182)

Banquet shots—two candid, one less so.

Michigan Opposes Public Housing

Plans Trade Show in 1950

THE 38th annual convention of the Michigan Sheet Metal, Roofing, Heating and Air Conditioning Contractors Association held in the Pantlind Hotel, Grand Rapids, March 10-11, was called to order by President Thomas W. Clark, Detroit. A representative of Mayor Welsh welcomed the delegates and called their attention to the city's convention facilities. It was the seventh annual convention of the state association held in the furniture center.

In his message to the convention, printed in the official program, President Clark directed attention to some of the problems of the association and suggested a method of overcoming them:

"There are many practical services which an association can perform but which unfortunately cost money, even on the most economical basis. By spreading the cost over a large membership many of these services can be instituted at a very small cost per member.

"There are several ways in which funds for carrying on the work of the association can be increased. We have the convention program. . . . We are also considering the possibility of having display space for rent in connection with future conventions. Some advertisers consider this far more attractive for advertising purposes than the bulletin. This would give the firms selling the industry direct contact with a considerable number of buyers and would undoubtedly attract larger numbers of contractors to our conventions."

Exhibits Planned in 1950

It was proposed and approved in a later session to extend next year's annual convention to four days and to hold simultaneously a trade show for exhibiting new products and developments pertaining to the industry. It was stated during the discussion on the proposal that many contractors have not been able to attend the national heating expositions and that a state exposition would offer contractors within the state an opportunity to become acquainted with the industry's developments.

Opposes Public Housing

A resolution expressing the association's opposition to public housing was placed before the closing session and adopted. Unanimous approval of the intent of the resolution was supported by citing examples of the excessive cost of Federal housing projects within the state as compared with private construction. Housing legislation under consideration in Congress was opposed as a step toward Socialism and as being detrimental to the interests of the private construction industry. The secretary was instructed to place the resolution in the hands of the members of Congress representing the State of Michigan.

1949 Officers

Dee Kramer, Flint	President
M. H. VanAssche, Detroit	Vice President
Elmer Stafford, Flint	Treasurer
N. J. Biddle, Detroit	Secretary

New Directors

Earl Oole	Grand Rapids
John Bos	Muskegon
William Metzger	Kalamazoo
Arthur Lange	Saginaw
Lyle Latten*	Muskegon

*Serving unexpired term of M. H. VanAssche.

"Safety is good business," said Mervin Gaskin, Detroit, "because it pays dividends."

This expert in the field of safety, especially in its application to the construction industry, said the financial losses from accidents can be estimated but their influence on health and happiness of the injured person cannot be estimated. He said it sometimes takes a serious accident to make an employer believe in safety and institute a safety program. As an example, he referred to the responsibility of an employer in notifying a wife that her husband has met with a serious or fatal accident.

Mr. Gaskin laid particular stress on the accident experience among the trades represented in his audience. Employees become safety conscious only when they realize their employer is trying to protect them from accidents.

Many contractors disregard safety rules in effect in plants where they are performing work. He said that when a contractor sends into these plants employees who disregard safety rules and practices, it creates a situation that causes the customer to avoid outside contracts. This may result in having his own maintenance men service and install equipment that is normally purchased from outside sources.

Construction Accident Rate Is High

Mr. Gaskin cited facts and figures to prove that the accident rate in the construction industry is high. Since accident experience is the basis of insurance rates, there is a financial advantage in safety but the

industry cannot be complacent in its effort to obtain it. In 1948, he said, one out of 16 building trades mechanics was injured, a ratio several times that experienced in coal mining which is often referred to as being extremely hazardous.

Several hours of the Thursday afternoon session were allotted to reports of the Sheet Metal Contractors' National Association. J. D. Wilder, executive secretary, introduced E. B. Brown, Chicago, who discussed the national association's progress with its proposed code of fair practices for engineers and architects.

The code would discourage unfair practices in letting ventilating and air conditioning work to intermediate contractors and labor brokers who contribute nothing to the advancement of the industry and who merely sell labor.

As an illustration of an advantage expected from operating under the new code, Mr. Brown outlined four actual contracts from which a contractor realized a profit of $3,838 by selling and purchasing the equipment as a part of the sheet metal contract.

W. A. Weidenman, Kansas City, reported on the labor activities of the national association and stated that the 1949 labor agreement is now ready for approval by the executive committee of the Sheet Metal Workers' International Association.

The association has made a number of suggestions for changes in the 1949 draft submitted by SMWIA. After final approval by both sides the new agreement will be presented to employers for signing.

Last year the association's labor committee made a study of the agreement and found that numerous sections were in violation of the Taft-Hartley law. Because of these inconsistencies, Mr. Weidenman recalled that the association recommended to employers of union labor that the 1948 agreement not be signed.

Mr. Weidenman prefaced his labor relations report by stating that the Labor Relations Committee has repeatedly pointed out that the membership of the national association is composed of employers of union labor and employers of non-union labor. All the efforts of the labor committee have been for the employers of union labor. The committee does not now, and has never professed, to speak for the employers of non-union labor, he said.

SMCNA Manual of Codes

Summarizing future SMCNA activities, Mr. Wilder stressed the need of a manual recommending standards of practice under a municipal warm air code. He said the association's warm air committee is now assembling data from which methods of enforcement, selection of municipal inspectors, recommendations for licensing, etc., will be developed in manual form. The manuals will be available to municipalities as a recommendation and guide for standardized code procedures.

In a second report to the convention, Mr. Brown disclosed that early replies to a recent sheet steel survey indicate galvanized sheet steel has become more plentiful. Over half the early replies show that contractors are having less difficulty in obtaining their requirements.

Mr. Wilder directed attention to the improvement realized from the sheet steel survey last year. The association's efforts at the time focused attention of government officials, the steel producers, and steel warehouses on the essential character and large tonnage requirements of the sheet metal contracting industry.

Friday morning, March 11, was devoted to reports of officers and committees and election of officers for the new year. Treasurer Elmer Stafford, Flint, reported on the association's finances and asked each member to actively promote membership. Secretary N. J. Biddle, Detroit, appealed for cooperation between local and state associations.

Michigan Gas Supply Improving

Commissioner Schuyler L. Marshall of the Michigan Public Service Commission disclosed at Friday's luncheon an improving gas supply in the state until 1951, when the present expansion program will be completed. He said the supply this year will be more ample than it has been during the past three years and that 1950 will see an easement in current restrictions.

J. D. Wilder, executive secretary of SMCNA, discusses a manual on warm air heating codes.

Front row: Dee Kramer and Thomas W. Clark. Back row: Elmer Stafford, N. J. Biddle, and M. H. VanAssche.

Indiana

In the February News Bulletin issued by the Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Secretary Frank E. Anderson devotes considerable space to state and federal legislation which will closely affect Indiana contractors from an economic standpoint. Two administration measures which warrant the attention of all business men are H.B. 199, on unemployment compensation, and S. 246, Federal school aid bill.

H.B. 199 would amend in many respects the Indiana Employment Security Act, under which the state operates its unemployment compensation program. Some of the major changes provided by the bill are as follows: An increase in maximum benefits to $25 for 25 weeks, from $20 for 20 weeks; revision of the experience rating formula which would increase payroll tax rates paid by Indiana employers, with the minimum rate being raised from 1/10 of 1 per cent to 1 per cent; relaxation of benefit disqualifications applying to people whose unemployment is from their own choice or action; extension of coverage to include employers of four or more people, as contrasted with the present coverage of employers of eight or more.

Contractors in Indiana are urged to contact their state representatives to protest "such ill-advised legislation."

Statewide action is urged by the Indiana association to battle attempts now under way to establish what it calls "Federal control of local schools," which will result from Federal Aid Bill, S. 246. Under this bill, the bulletin states, "Indiana would pay to the Federal Government about $2 for every $1 returned for our schools."

The association contends that remarkable strides have been made by states throughout the nation in the financing of local schools since 1939-40, with an average increase of 59 per cent in school expenditures. Support of local schools through state-collected funds has increased 117 per cent.

Indiana state aid to schools in 1947-48 amounted to $46,135,655 as compared to $19,911,569 in 1940-41.

Feeling that "there is no such thing as Federal aid without Federal control," the Indiana association urges all contractors in the state to contact their congressmen in a united effort to defeat the proposed bill.

New York

Seventeen sheet metal apprentices received their diplomas on February 23 at a dinner meeting in Buffalo sponsored by the Roofing and Sheet Metal Guild of Western New York, Inc. President John Yager presided at the meeting and Joseph R. Stiglmeier, chairman of the training program, was toastmaster. The diplomas were presented by Robert Hoole, principal of the McKinley Vocational School, and Raymond Schueler, an instructor at the school.

According to Clarence J. Meyer, secretary of the Western New York Guild, this is the first group of sheet metal apprentices to graduate in Buffalo and the largest of any group to graduate under the New York State apprentice training plan, as set up by the SMCNA. The training course is supervised by the New York State apprentice training service.

The graduates are Graham Brush, Roland W. Phillips, Donald H. Stephan, Albert J. Schubing, Jr., Benedict Kwasniewski, Lucius C. Piehler, John N. Herb, Clifford Gettere, Joseph A. Herb, Frank J. Jacklewski, Jr., Raymond Gutowski, John J. Grandits, William J. Fuchs, Donald Blair, Peter J. Del Bel, Richard Diegelman, and Robert Smith.

Pittsburgh

According to an announcement by the secretary of the Sheet Metal and Roofing Contractors' Association of Pittsburgh, new officers of the association for 1949 are as follows:

President.....Louis C. Luckhardt
1st Vice President.....Ralph J. Meyer
2nd Vice President.....W. E. Keist
Secretary-Treasurer.....E. W. Scarborough

Directors who will serve for 1949-'50-'51 are W. J. Keist, M. A. Carrop, G. E. Keir, Ed. Riesmeyer, W. J. Horvath, and Fred E. Geier.

Florida

The Roofing and Sheet Metal Contractors' Association of Florida will hold their 27th Annual Convention on April 22 and 23, 1949. Headquarters will be the Robert Richter Hotel in Miami Beach, Florida.

The program committee is planning open forum sessions in which members from all parts of the state can exchange ideas on problems common to the sheet metal field. Featured addresses will deal with production, research, and merchandising.

The association extends an invitation to wives of members, promising an enjoyable program for all.

INDOOR COMFORT CONFERENCES

Columbus, Ohio—Apr. 18-20. Newton T. Hess, 63 E. Goodale St., Columbus 8.
Toledo, Ohio—Apr. 27, 28, 29. W. H. Abbenzeller, 1714 N. 12th St., Toledo 2.
Milwaukee, Wis.—May 4, 5, 6 (tentative dates). J. H. Reock, 2005 W. Oklahoma Ave., Milwaukee.
Charlotte, N. C.—May 25, 26, 27. J. H. Daughtry, P. O. Box 4147, Charlotte.
Baltimore, Md.—June 1, 2, 3 (tentative dates). T. H. Smoot, 6500 East Ave., Baltimore 24.
Lewiston, Me.—June 8, 9, 10 (tentative dates). Thomas R. Donahue, Jr., 352 C Street, South Boston, Mass.
Long Island, N. Y.—June 13, 14, 15. M. C. Beard, Thatcher Furnace Co., Garwood, N. J.

CANADA

Ottawa, Ont.—Apr. 18-21. A. L. Acton, c/o Beach Foundry, Ottawa.
Moncton, N. B.—May 2-6. C. D. Hart, Record Stove and Furnace Co., Moncton.
Quebec City (French)—May 9-13. J. P. Thibault, La Fonderie de L'Islet Limitee.

EQUIPMENT DEVELOPMENTS

Air Renewer 55

Designed to meet six of the seven requirements for ideal *indoor comfort,* a unit called an Air Renewer has been introduced by a company specializing in the manufacture of blower and exhauster equipment. The seventh requisite, air at satisfactory temperature, must of course be supplied by the heating unit with which this new product is used.

The perfector of the Air Renewer claims that it will deliver air containing the proper amount of moisture continually and automatically, keep air moving constantly, imperceptibly; keep air free of dust, dirt, lint, smoke, and pollen; clear it of staleness; cleanse it of germs and bacteria and maintain adequate density.

Basis of the unit is the use of glycol. By proportioning a mixture of glycol and water, automatically, the unit is said to maintain any desired degree of humidity.

In addition to being exposed to the triethylene glycol-water vapor, the air passing through the unit is bathed in concentrated rays of germicidal lamps, thus being cleared of airborne bacteria and other impurities. From there air is moved by the blower to the heating unit.

The components are encased in a baked enamel, air tight cabinet.

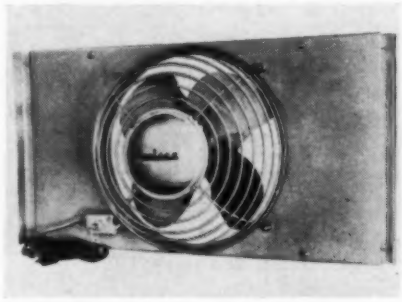
The Brundage Co., Kalamazoo, Mich.

Use Coupon on This Page

Portable Window Fan 56

For use in ventilating smaller areas, a portable, direct drive window fan is made to fit conveniently into the upper panel of a standard window permitting the raising and lowering of the upper sash at will. It is adjustable from 25 to 36 in. and is furnished complete with pull-chain switch and plug-in extension cord.

Air delivery of the fan is rated at 1,000 cfm. It is driven by a 1/25 hp motor which operates at 1,550 rpm.



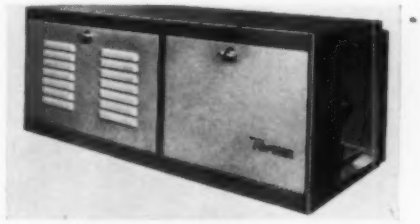
This fan is recommended by the manufacturer as the ideal unit for use in home laundry rooms, bathrooms, kitchens, and small offices.

Chelsea Fan & Blower Co., Inc., 1206 Grove St., Irvington, N. J.

Horizontal Gas Furnace....57

A 100,000 Btu horizontally-designed gas fired forced air furnace which has been developed measures only 21¼ x 23 x 52 in. This model is an addition to a line which consists of models of 30,000, 60,000, and 80,000 Btu sizes.

Because of its size and horizontal design, this furnace can be installed in any small room, under floor, ceiling or stairs, or in any similarly restricted area.



Important features include a blower motor resiliently mounted on solid base and completely wired; heavy gauge electrically-welded steel combustion chamber; slotted port immersion cast-iron burner for uniform heat distribution and efficient operation. The furnace operates economically on natural, mixed, manufactured, or LP gas.

Norman Products Co., 1150 Chesapeake Ave., Columbus, Ohio.

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We will ask the manufacturers to send full particulars about the products and literature mentioned. 4-49

Be sure to circle the items you want.

Equipment Developments

55	56	57	58	59	60	61	62
63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	

New Literature

231	232	233	234	235	236	237	238	239

Manufacturer ☐ Jobber ☐ Dealer ☐

Name .....

Company .....

Address .....

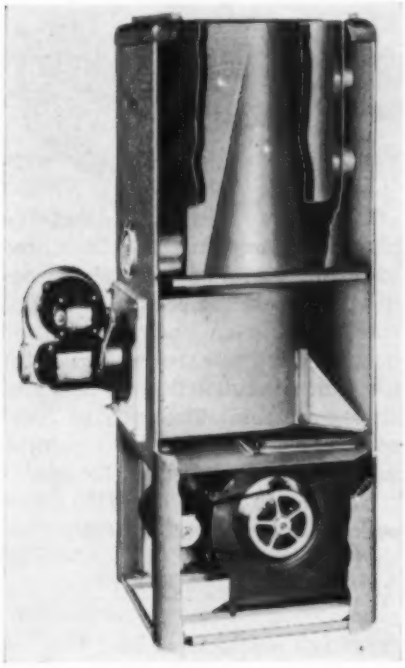
Address: AMERICAN ARTISAN, 6 North Michigan Ave., Chicago 2, Illinois

EQUIPMENT DEVELOPMENTS

Use Coupon on Page 123

Oil Fired Furnace.....58

A forced air furnace, sold with interchangeable pressure type oil burner, vaporizing type oil burner, or gas burner, has been designed for basement or utility room installation. The interchangeability of the burners makes it possible for owners to convert the furnace from oil to gas, or vice versa, by merely changing the burner. This is accomplished by simply removing four nuts from the bolts on the front of the furnace.



The conical design of the combustion chamber provides a heating surface parallel to the burner flame. The inner liner is attached to the radiator instead of to outer cabinet walls, thereby eliminating heat transfer from liner to outer cabinet.

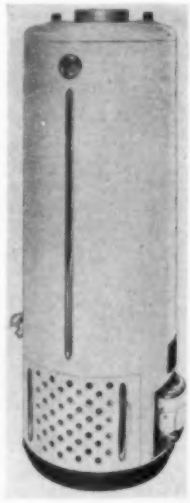
A blower mounted on rubber pads to eliminate metal to metal contact is located at the rear of the cabinet for unobstructed air flow to the baffle plate. The air flow, hitting the baffle plate, is directed over the heat exchanger. This arrangement reduces power required to circulate air for winter heating and increase the volume of air desirable for summer circulation.

Other important features include an inspection door which provides a relief opening to the combustion chamber and serves as a means for lighting the burner, and a large cleanout at the bottom of the radiator which permits accessibility without dismantling the cabinet.

Comfort Equipment Corp., 914 S. Michigan Ave., Chicago, Ill.

Oil Fired Water Heater....59

An automatic water heater, oil fired, has been added to a manufacturer's line of oil fired heating equipment. Its purpose is to supply an ample amount of domestic hot water at all times at reasonable cost.



Some outstanding features include an oil-metering control which is recessed into casing to save installation space, but is readily accessible for service and adjustment. The control is equipped with automatic shutoff valve. Other features are a conveniently located temperature adjustment knob, fiberglas insulation on the top of the heater and corrugated asbestos forming three air spaces on the sides. The outer casing is finished in white baked enamel with stainless steel trim.

The heater is approved by the Underwriters' Laboratories, Inc., for installation on combustible floors. It is available in 30 and 50 gal sizes. Dimensions are: height, 53 in.; casing diameter, 18 in. for the 30 gal size; 22 in. for the 50 gal model.

Thermo-Products, Inc., North Judson, Indiana.

Concrete Drill Bit.....60

A concrete drill bit said to be capable of drilling hundreds of holes without dulling is available in sizes from ¼ in. to 2 in.

These bits are handmade from high grade steel with heat treated special carbide cutters set in and brazed to the blunt end of the bit shaft. The blunt end design enables them to drill through gravel or rounded rocks in concrete rather than being deflected by them. It also reduces breakage to a minimum.

Rotary Concrete Drill Co., Pasadena 2, Calif.

Sheet Metal Cutter.....61

An easily maneuverable cutting tool for sheet metal is being marketed under the name of Nibblex. It is capable of making circular cuts with radii as small as 1 in. and of cutting sheet metal up to 20 ga without bending, burring, or stretching of metal. It is recommended as especially handy for a smooth job on corrugated sheet or pipe and for cutting plastic sheet.

The size of the Nibblex is an attractive feature. It is small, weighing only 13 oz, can be easily carried and can be fixed in the chuck of any ¼ in. electric drill. This unit, consisting of 7 simple parts, should be a valuable addition to the tool kits of sheet metal workers and roofers.

Nord International Corp., 130 Greenwich St., New York 6, N. Y.

Drive Cleat Notcher.....62

A drive cleat notcher has been announced as an efficient device for finishing operations on ductwork. It can be used for notching the end of drive cleats, 20 ga or lighter, up to 3 in. width, and an adjustable gauge can be set for cleats of various widths. The dies are made of two pieces of hardened steel and have full clearance so that the punching can drop through. A stop on the notcher prevents the metal from extending beyond the end of the dies.

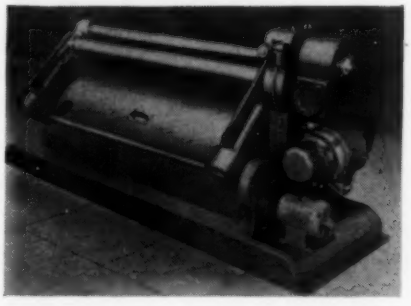
Its construction allows the notcher to be easily mounted on the bench or out in the shop with clamps or bolts and screws.

Dimensions of the notcher are width, 4 in.; length, 13 in. Weight is 15 lbs.

Reiner & Campbell Co., Inc., Box 285, Elizabeth, N. J.

Plate Bending Roll.....63

A new series of plate bending rolls has been added to a line of heavy duty bending rolls which feature all-steel construction. The new machine, Series 600, is equipped with three 6 in. diameter forged steel



rolls and is driven through a totally enclosed worm gear drive. The bearings throughout are made of solid bronze and are precision bored for the main roll journals. The main frame and housings, of welded construction, are connected with anti-torque connectors to prevent twisting of frames during heavy rolling operations.

This line of machines is built with an automatic drop end which automatically raises the top roll when the drop end is lowered for removal of fully rolled circles.

Standard equipment includes 5 hp squirrel cage motor with reversing control, three roll drive to main rolls and manual roll adjustment to two lower rolls. Power adjustment to rear forming roll, cone rolling attachment, magnetic brake motors, and air operated drop end are available as optional equipment.

The series includes four models, with a working length from 50 to 98 in.

Reed Engineering Co., P. O. Box 415, Carthage, Mo.

Attic Fan Package.....64

"All in one package" is the manufacturer's description of a low cost attic fan recently placed on the market. This 22 in. three bladed fan is rated at 3,000 cfm and is belt driven by a ¼ hp, 110 v, 60 cycle, ball bearing motor. It is recommended as particularly suitable for small home installation.

The package is shipped complete with all material necessary for installation, including the fan itself, resilient mounting, felt sealing strips, automatic ceiling shutter, automatic electric timer, safety fusible link, and complete instructions.

The fan discharges vertically and requires no vent boxes or other fittings. It may be fitted directly into a ceiling opening, 25 x 29 in., which has been framed with headers.

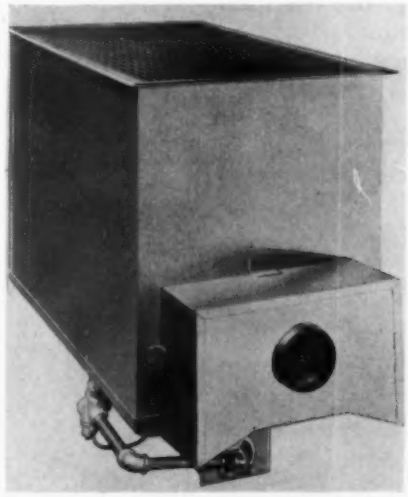
Special features are the automatic electric timer built into the fan casing, eliminating installation of a wall switch leg, and hinged automatic ceiling shutters that can be lowered, making it possible to clean and service the fan and shutters from the floor below.

Viking Air Conditioning Corp., Cleveland 2, Ohio.

Gas Floor Furnace.....65

A gas floor furnace, suitable for installation in homes, churches, schools, stores, and other business places, has been approved by AGA for natural, manufactured, and LP gas. It is a self-contained unit which fits directly below the floor, between the studs, eliminating the need for heating pipes and ducts.

The combustion chamber and radiators have been made gas tight by continuous welding of the seams.



Three models of the furnace with input capacities of 35,000, 50,000, and 65,000 Btuh are available.

Perfection Stove Co., 7609 Platt Ave., Cleveland 4, Ohio.

Hydraulic Vise.....66

An oil-hydraulic vise now available is a swivel-type, machinist's vise with 3½ in. jaw width, and 6 in. jaw opening. Being a foot-operated vise, it allows the operator to keep both hands free for handling and positioning work between the jaws of the vise. The manufacturer claims a substantial saving in time, less spoilage and breakage, as well as reduction in accidents, as a result of the operator's being able to control opening and closing of the vise at any position, whenever necessary.

It is made with two simple foot control pedals, one power, the other release. The power pedal provides a slow short movement of the front jaw and only eight strokes are needed for closing from full open position. The jaw is stopped at any desired position by removing pressure from the release pedal. When

EQUIPMENT DEVELOPMENTS

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jaws have been closed, maximum pressure for gripping and holding can be developed with two additional strokes of the power pedal, providing a pressure of 6,000 lbs per sq in. The vise is protected by a safety relief valve to prevent overloading of the hydraulic system and of the vise itself.

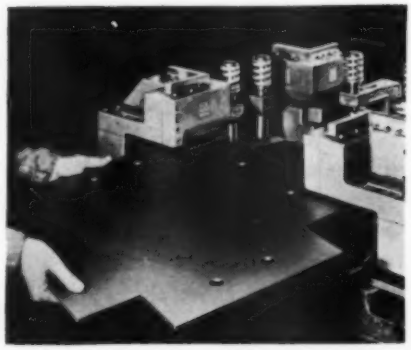
Because the unit is completely self-contained, all precision parts are protected from dirt and damage. Casings are malleable iron and jaw faces are hardened tool steel.

Columbian Vise and Mfg. Co., Cleveland, Ohio.

Notching Units.....67

"NJ" notching units are now available in a new heavy duty design to provide a maximum 5 in. x 5 in. 90 deg corner notch in metal up to ¼ in. thick mild steel. They have the same shut height as "CJ" hole punching units made by this manufacturer and therefore may be used in combination setups to punch and notch up to ¼ in. thick mild steel in one operation.

Their self-contained design permits the same group of notching units to be used repeatedly in unlimited setups in stamping presses and press brakes. Each unit is mounted independently allowing quick setups to varying patterns, thus keeping tools in almost continuous operation.

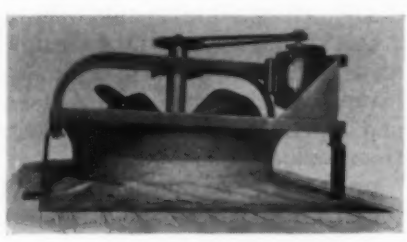


Complete setups may be made outside the press on T-slotted plates or templates. This allows the setups to be moved onto the press bed and to start production with the first downstroke of the press ram. Templates are combined base plates and notching patterns with holes for pilot pins and holddown screws. When not in active use, the templates may be stored and the notching units kept in continuous operation on other templates. By storing the templates, the notching patterns are automatically stored.

Wales-Strippit Corp., North Tonawanda, N. Y.

Ventilating Fan.....68

A universal type ventilating fan has been designed for installation horizontally, vertically, or at any angle. Installation parts kits are supplied so that the dealer can have a complete horizontal or vertical ventilating package merely by switching installation kits, thus simplifying installation and inventory. Included in each installation kit is a flexible, air-tight fabric boot which in the horizontal installation is slipped over and sealed to the venturi ring, then tacked down around ceiling to form the suction chamber. An automatic ceiling shutter is also furnished.



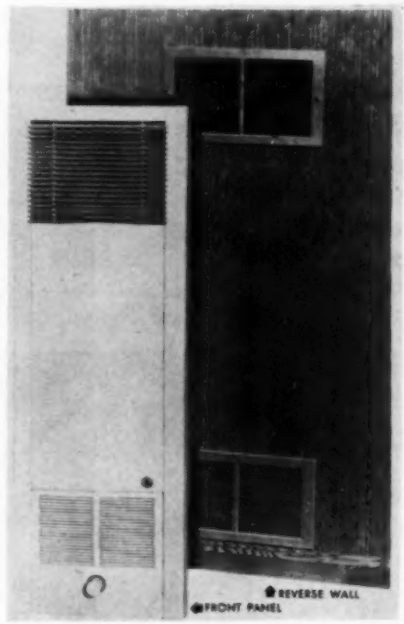
The v-belt drive is always accessible no matter what installation is used. The motor has a conduit box attached for all 110 volt applications to simplify connection with electrical circuit. Other features of the fan are precision type motor and fan bearings, radial and thrust ball bearings lubricated and sealed at the factory, and die cut blades, die formed and accurately balanced.

These units are available in fan sizes of 24, 30, 36, 42, and 48 in.

Holcomb & Hoke Mfg. Co., Inc., Indianapolis, Ind.

Dual Wall Heater.....69

A dual wall heater of 25,000 Btu input has been especially designed to meet basic requirements for low cost housing. Its valuable features include economy of installation, high operating efficiency, and safety. The Dual 25 has the advantage of ease of installation, as it fits in a standard 4 in. wall with studs of 16 in. centers without any extra construction. It is adaptable to natural, manufactured, or LP gas.



The heater offers additional advantages of vented operation, coupled with circulating-type heat which gives uniform warmth throughout each room. The heating element is completely enclosed behind the attractively designed wall panel which always remains cool.

Holly Mfg. Co., 875 S. Arroyo Parkway, Pasadena 2, Calif.

Utility Room Furnace.....70

An oil fired furnace, marketed as the Climate Master Compact 80, is designed to meet the need of the majority of small homes for a variety of applications. The fact that it measures only 25 x 25 in. makes it suitable for utility room installations where floor space is at a minimum. Since it is only 61½ in. high,

it is possible to use the unit in average basement installations and allow ample headroom for the duct and piping system.

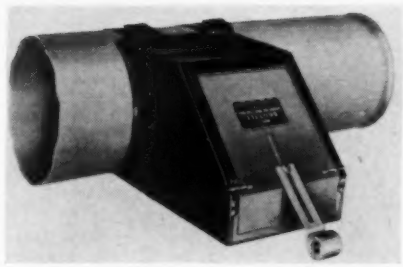
Capacity of the furnace is rated at 80,000 Btu bonnet output and 800 cfm. The oil burner is of the vaporizing type with mechanical air supply synchronized with oil supply in order to provide clean, efficient combustion.

The Hess Company, 1211 S. Western Ave., Chicago 8, Ill.

Draft Control.....71

A barometric draft control, made in the furnace sizes, includes the square housing which provides larger opening to the chimney, larger effective vane area, more uniform and more effective draft regulation.

The vane is mounted at an angle so that full opening is obtained with rotation of substantially less than 90 deg. Balance is retained throughout the movement and



nearly equal sensitivity is maintained at all draft values.

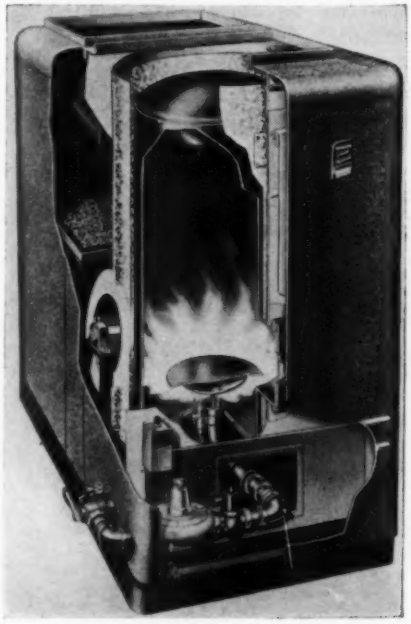
An innovation in the control is a square boot which telescopes over the control for shipping, making a compact package and thus effecting a saving in shipping space and charges.

The bearings used are equally efficient for radial and thrust load, so the vane operates freely at any angle up to 45 deg. Where a greater angle is encountered, rotation of the control in the boot restores it to less than 45 deg.

Skuttle Mfg. Co., 4099 Beaufait Ave., Detroit, Mich.

Gas Fired Furnace.....72

The introduction of new winter air conditioning gas furnaces serves to announce entrance into the residential gas heating field of a manufacturer previously producing only oil fired units. The new gas fired furnaces are available in three sizes for small and medium sized homes. Output ratings are 60,000, 80,000, and 107,000 Btu at the plenum. Each unit consists of a clog-proof monoport burner, furnace and radiator assembly, blower, air filter, and automatic humidifier. Furnace and radiator are built of heavy, hot-rolled steel. Cabinet construction is auto-body steel, finished in baked enamel.



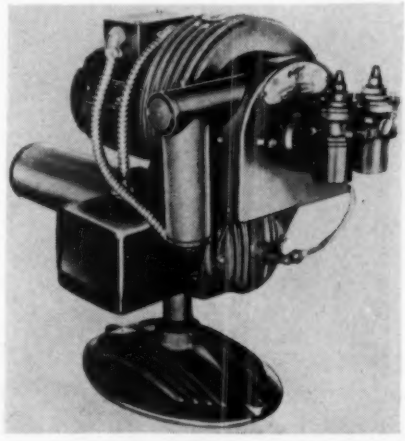
The manufacturer stresses sound simplicity of design, absence of offset passages and hot spots, extra heavy construction, fast heating response and quiet operation, and easy accessibility of all parts.

Timken Silent Automatic Div., Jackson, Mich.

Low Pressure Burner.....73

A new type low pressure fuel unit recently announced is to be known as the Mist-O-Miser. Its purpose is to produce an atomized type flame, 1/5 to 4.0 gph, by a single, simple adjustment without changing the large nozzle.

The Mist-O-Miser nozzle is about 10 times the diameter of a 1.0 gph



pressure nozzle and for that reason is practically clog-proof even when contaminated with oil.

Fuel oil entering the unit is pre-atomized before it comes into contact with the rotor, where it is mechanically heated to 100 F above ambient. It then travels to the nozzle through heat insulated tubing where it is re-atomized by the specially designed nozzle.

In addition to producing a fire variable from 1/5 to 4.0 gph, this low pressure unit eliminates the necessity of a return line on all outside tank installations. A single line from the unit to the fuel tank is all that is required.

The manufacturer claims that the Mist-O-Miser will put the advantages of the low pressure principle within reach of all home owners.

HomEase Products Co., 200 Iowa Ave., Paterson 3, N. J.

EQUIPMENT DEVELOPMENTS

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Diaphragm Gas Valve.....74

Compact size is an outstanding feature of a diaphragm gas valve which is now available. The length dimensions of these valves are identical with solenoid valves of the same pipe size, making them suitable for replacement where users prefer more quiet operation.

Because of their size, they can be used on a variety of gas fired applications where the standard size diaphragm valve could not be used. Their quiet operation and relatively high gas capacity recommend them for such applications as unit heaters, gas fired circulators, and new compact type boilers and furnaces.

The valves are furnished in ½ and ¾ in. sizes and may be used on natural, manufactured, mixed gas. They are also available for LP gas on special order.

White-Rodgers Electric Co., 1209 Cass Ave., St. Louis, Mo.

Spot and Arc Welder.....75

"The Dual Weld," combination spot and arc welder, has been developed as a compact unit which takes less than half the floor space needed by the average 5 kva spot welder plus the average 120 amp arc welder. It measures only 14 x 19¾ x 26⅝ in. The welder is especially recommended for use in sheet metal shops and in maintenance

and repair departments of factories.

Capable of spot welding, arc welding, soldering, and brazing, the Dual Weld can be quickly changed over from arc welding to spot welding by operation of a hand lever.

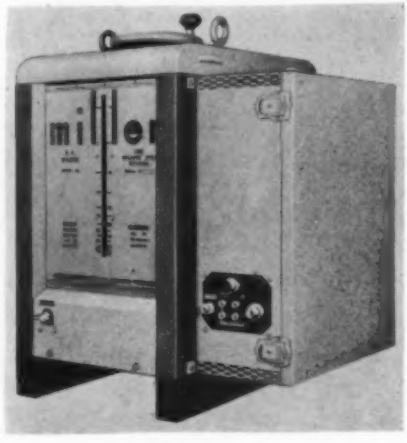
A calibrated current scale, which allows infinite adjustment and current control, also provides an accurate reading of current output, allowing accurate recording of job records for future reference use on identical work.

Delta Mfg. Div., Rockwell Mfg. Co., Milwaukee 1, Wis.

Welding Timer.....76

A welder-timer assembly, consisting of a pneumatic timer with solenoid gas valve and flow meter assembled to an ac arc welder, is designed for making spot welds.

The arc welder features continuous current control, with adjustment to the fraction of an ampere simply by rotating the control crank



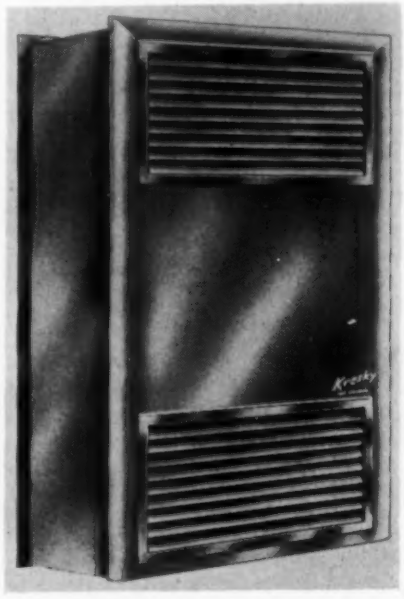
on top of the machine. It is provided with 220/440 volt primary connections; power factor correction, to afford a higher power factor and reduce the kva demand load and primary ampere input, is available as optional equipment.

The pneumatic timer is wired directly to the arc welder, requiring outside connections only to input power, gas, water, ground cable and the welding torch. The time in cycles to be used is selected by adjusting a control which is easily accessible through a door in the side of the timer case. The time in cycles in use is shown by an indicator disc, geared to the adjustment control.

Miller Electric Manufacturing Co., Appleton, Wis.

Wall Furnace.....77

To meet the demand for heating plants which cut building costs and conserve floor space, an oil burning



wall furnace has been designed which is said to give the home owner all the advantages of a central heating plant, including automatic or manual control. It is built to deliver heat to both sides of a wall, but by closing one side, the heat can be diverted to only one room.

Its output of 65,000 Btu is obtained from a maximum fuel consumption of two quarts per hour.

Height of the furnace when installed is 56½ in. and the width is 33⅝ in. Inside thickness of the furnace is 17 in. with an overall thickness of 19½ in.

Kresky Mfg. Co., Petaluma, Calif.

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Remember that 28-gauge ENDURO works as easily as familiar 26-gauge galvanized steel, and that it requires no special equipment. Your usual soldering practice is fine for joining. Use 50-50 or commercial stainless steel solders, with a large iron slightly hotter than you use for ordinary jobs. Immediately after soldering wash away *all traces* of acid or flux—using a 5% to 10% solution of washing soda and water. Remember to hang with stainless steel fittings and accessories, too.

The *full line* of Berger Roof Drainage Products made of Republic ENDURO Stainless Steel is available in local warehouse stocks. Your jobber can supply you. He can also furnish Berger Roof Drainage Products in galvanized steel and in copper.

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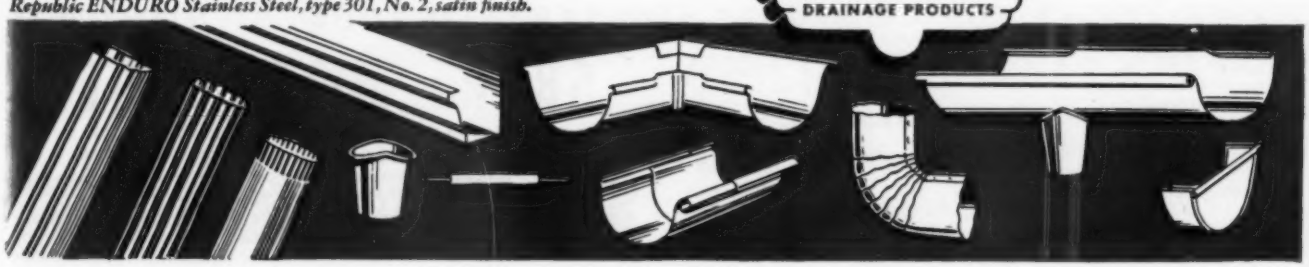
Berger Stainless Steel Roof Drainage Products include Snaptite Eaves Trough; "K" Gutter; Plain Round, Corrugated Round and Corrugated Square Conductor Pipe; plus a complete line of all necessary fittings. All are made of 28-gauge Republic ENDURO Stainless Steel, type 301, No. 2, satin finish.

BERGER
STAINLESS STEEL ROOF
DRAINAGE PRODUCTS



Pre-cutting DUX-SULATION in the shop to fit special shapes and sizes of duct work saves installation time on "Park Forest" development near Chicago where over 600 heating units are now being installed.

Contractors — Sunbeam Heating & Air Conditioning Co., Chicago.

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A TRIM APPEARING & SMOOTH FINISHED JOB!

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DUX-SULATION IS NOW AVAILABLE— PROMPT SHIPMENT

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All of these EXTRA FEATURES add up to greater plant efficiency with decreased plant operating costs year after year. The actual cost of the insulation is paid back in dollars saved over a very short period of time.

DUX-SULATION is a flexible insulating felt, made ½" and 1" thick. It is put up in an easy-to-handle Roll, 36" wide, containing 100 square feet. Special adhesive for securely cementing the felt onto the metal and Asbestos-faced Tape for covering the joints and corners, comes with each Roll, together with simple, illustrated Directions for Applying.

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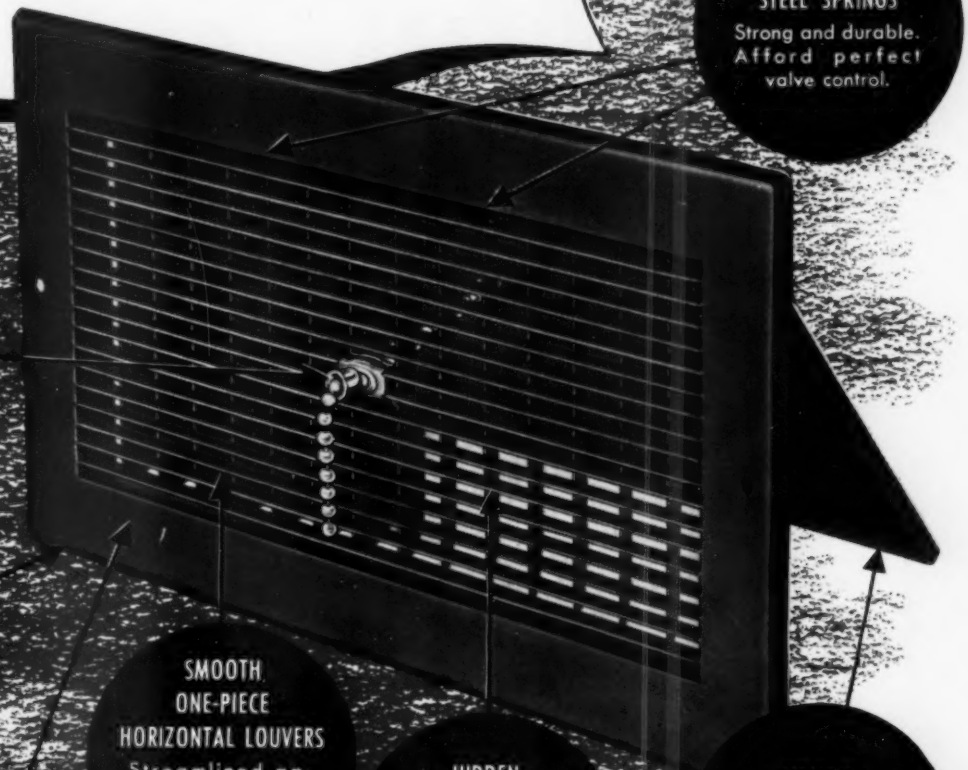

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Streamlined appearance. No center band to resist air flow.

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Give perfect air diffusion; eliminate drafts.

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Motor-Driven Blower Circulates Air Through Tegelene Conditioner

Here is the first basically *new* air-conditioning development *in years!* Here is an amazing new sales story to give you tremendous competitive advantages . . . the TEG CONDITIONER —the air treating unit that circulates, super-cleans, washes, *sterilizes* and humidifies the air in one completely automatic operation.

THE TEG CONDITIONER OFFERS ALL THIS—AND IT'S PRICED TO SELL!

1. *Super-cleans and freshens air.* A permanent, self-cleaning filter removes dirt, pollen and other objectionable matter. Air is circulated over a continually flushed and wetted fiber-glass filter.

2. *Sterilizes air.* In hospitals and elsewhere, the medical profession has demonstrated that Triethylene Glycol vapor kills many types of air-borne bacteria that cause infectious diseases. Most effective killing action is obtained at certain relative humidities. The TEG CONDITIONER vaporizes Triethylene Glycol to produce this killing action.

3. *Controls humidity.* The TEGelene solution and the automatic float valve control relative humidity simply and automatically when humidification is required.

4. *No filters to clean or replace.* A continual cascade of TEGelene cleans dirt from filters every few minutes. The unit need be drained and flushed only at the end of the heating season.

5. *Simple in operation, completely automatic.* The TEG Conditioner is compact and self-contained. Used primarily with warm air heating systems, it operates on a completely automatic cycle in all seasons. Can also be used with other types of heating systems. Simple to install, in either a new system or in converting an old system.

NOW IN PRODUCTION AFTER YEARS OF RESEARCH AND FIELD TESTS

TEG Conditioners are now being produced to meet mounting demand after years of laboratory and field tests. Home owners and dealers alike are delighted with the trouble-free, five-way conditioning which the TEG Conditioner offers.

DESIRABLE DEALERSHIPS STILL AVAILABLE

Territories are still open for aggressive dealers. Let the TEG Conditioner boost *your* profits with the first *new* air-conditioning sales story in years. Write us now for complete information.

Licensed for manufacture under U.S. Patents Nos. 1,696,935; 2,356,757; 2,429,265; 2,431,389. Other patents pending.

NATIONAL AIR CONDITIONING INCORPORATED

JOHNSTOWN, PENNSYLVANIA

Teg CONDITIONER

PACKARD SUNLIGHT MOTORS

We're Building More So You Can Build More

PACKARD SUNLIGHT MOTORS for compressors washing machines power-driven bench tools ironers milk separators milking machines furnace blowers stokers oil burners water pumps ventilators and many other applications

Packard Sunlight Motors are now produced in greater quantity to satisfy the growing demand for top quality power units in the appliance field. Increased production facilities in our new plant enable us to offer additional customers the opportunity to build trade acceptance and consumer good will with the efficiency and dependability of Packard Sunlight Fractional Horsepower Motors. Now you, too, can increase the quality and prestige of your products by using this great name in appliance motors to power them.

Packard

REG U.S. PAT. OFF.
TRADE MARK

Packard Electric Division, General Motors Corporation, Warren, Ohio

DEPENDABLE APPLIANCE MOTORS FOR THIRTY-TWO YEARS

NIAGARA Gas FURNACES

Combustion chambers of cast iron or steel are included in the line of Niagara gas-fired units, both gravity models and completely automatic winter air-conditioners. Two vertical models meet the requirements for basementless homes and apartments. Vertical models are shipped as complete package units. All gas furnace cabinets attractively finished in Hammerloid enamel.

NIAGARA Coal FURNACES

Here's a really complete line of coal furnaces—round and square cased cast iron; round and square cased steel; and coal fired winter air conditioners.

NIAGARA Oil FURNACES

Completely automatic units of lasting attractiveness and dependable, economical operation with gun type pressure burners. All cabinets Hammerloid enamel.

. . . and merchandising helps

Niagara colorful folders, window signs, decalcomanias, electric signs, catalog sheets, sales portfolios, and other merchandising helps assist you in selling Niagara to your prospects.

THE Niagara line is a quality line—57 years of furnace manufacturing demonstrate that the reputation of Niagara is well established.

The Niagara line is complete—gas, coal, and oil in a range of 33 sizes and models which meet any residential demand for warm air heating.

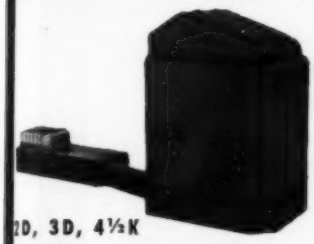
And Niagara believes that the dealer should make a profit while serving his customer with satisfactory heating at reasonable cost. Write for complete details of Niagara furnaces and Niagara merchandising helps.

NIAGARA FURNACE DIVISION
The Forest City Foundries Co.
2500 West 27th St.
Cleveland 13, Ohio

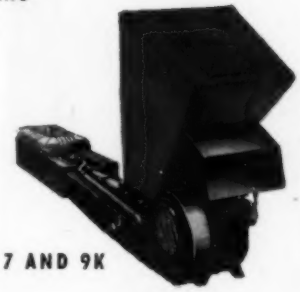
NIAGARA GRAVITY AND WINTER AIR-CONDITIONING UNITS

STOKER SALES ARE *up 20%*
BUT...THEY'RE SHOPPING BEFORE THEY BUY

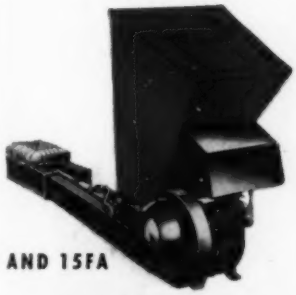
HE
ROFIT LINE SINCE '29



2D, 3D, 4½K
RIAL



6, 7 AND 9K



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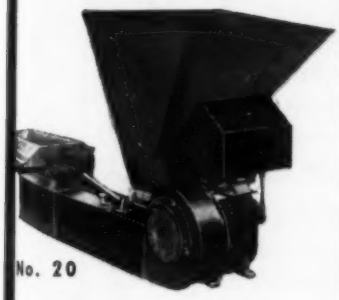

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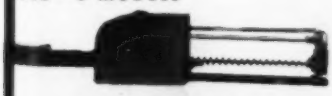
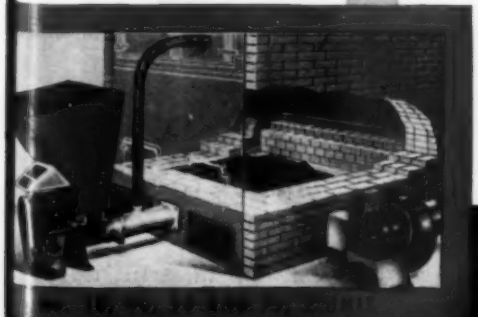
FEED—3 MODELS





TO MEET THIS BUYERS' MARKET SELL A PRODUCT WITH A PLAN

To compete successfully in a "buyers' market" you want a line that is complete, that has quality, beauty, rugged construction and models for every job. FireTender, with the exclusive "Econo-Mixer," gives you all of these PLUS a complete, new factory Selling PLAN that you can afford, individually adapted to your organization to make you more money.

FOR MORE SALES SELL FIRETENDER!

- Minimum Unit Profit $80
- Small Inventory
- Minimum Service
- Established Credit Item

* Plus a SELLING PLAN

FIRE TENDER

Also, Complete

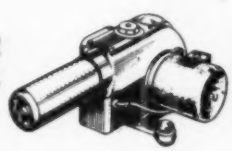
SALES AND MERCHANDISING HELPS

which build your Sales, Multiply your Profits

Easel Presentation. "How to Sell FireTender" book. New Literature, Cooperative Advertising, Newspaper Mats, New Electric and Clock Signs, Direct Mail, Radio Scripts, Demonstration Equipment, Novelties, Window Streamers. Factory and Field Sales Training. Contests. Potential Sales and Profit Data... and

DISTRICT REPRESENTATIVES TO SHOW YOU THE WAY TO PROFITS WITH THE FIRETENDER PLAN

FIRETENDER OIL BURNERS



DOMESTIC & COMMERCIAL

**Write Us Today* FOR "THE FIRETENDER PLAN FOR '49"

THE WAY TO BIGGER PROFITS IN TODAY'S BUYERS' MARKET

Holcomb AND Hoke MFG. CO. INC.

1540 VAN BUREN ST., INDIANAPOLIS 7, IND.

Master Kraft HAS DONE IT again!

REG. U.S. PAT. OFF.

Up to 50% Savings reported by Home Owners from Coast to Coast

READ what Home Owners write! READ what's for you!

For instance, a resident of Wisconsin actually **saved $190.00** the first heating season after replacing his former burner with a new Master Kraft.* A prominent business man of Minnesota **saved 48%** on his fuel cost after his Master Kraft was installed. A physician of Illinois **saved $85.00** first heating season with the new Master Kraft. A home owner in Massachusetts installed a new Master Kraft to replace a burner *only* one year old—found the new Master Kraft **saved 40%** on his fuel bill the first year. An Oregon home owner found heating with this burner **$31.00 per year cheaper** than with solid fuel. A Pennsylvania home owner cut **his fuel bill nearly 35%** with a Master Kraft Sun-Blaze boiler unit. A resident of Massachusetts, removed a burner of an ordinary type only two years old, replaced it with a new Master Kraft, **saved 50%** on his fuel cost! THINK what you can do with this burner! Use it to get sales rolling in NOW.

*Names available on request

The **Dual-Oxenizer** (Patents Pending) which has made possible the savings reported at the left is a powerful sales tool at your disposal. This, along with the new units that are easy to install and built for easy servicing, makes Master Kraft one of the outstanding oil heating equipment lines in the country. This is all backed up by Harvey-Whipple, Incorporated, Master Kraft advertising in national magazines, along with all manner of selling helps, free of charge. All this makes it possible for **you** to spend less time on installation and service work, and more time for contacting new customers, thereby, selling more and making more money.

Mail That Coupon Today!

HARVEY-WHIPPLE, INC., Dept. AA-1.
2255 Columbus Ave.
Springfield 2, Mass.
Please send me information NOW.

Name.....

Address.....

City..... Zone..... State.....

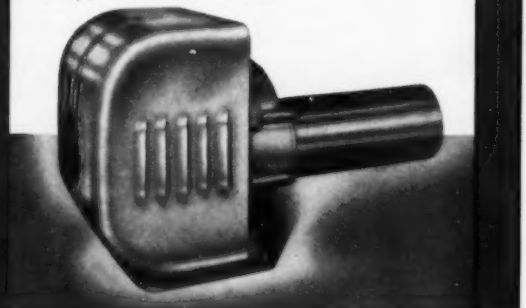
Main Line of Business.....

Master Kraft OIL HEAT

the **Master Kraft** line

(Patents Pending)

The **Master Kraft** Conversion Burner is saving Home Owners up to 50% on fuel costs.



The **Master Kraft** Warm-Air Conditioner Unit made in 5 models to heat almost any size home.

Read what Home Owners write at the left.

The **Master Kraft** Sun-Blaze Boiler Burner Unit made in 3 models to heat almost any size home.

HARVEY-WHIPPLE, INC.
Springfield 1, Mass.

Gas-Tight Joints *made easily* with FIREITE*

Fireite goes on quickly, forms tight seal

HERE is an easily worked sealing cement—ready mixed, ready to use—which you can quickly apply to any clean surface. It air-sets or heat-sets equally well into a practically indestructible joint.

Fireite remains gas-tight against the highest temperatures as well as expansion and construction strains—especially important features on domestic oil burner and stoker installations where airtight, gas-tight joints are essential for efficient combustion.

Fireite Asbestos Furnace Cement has minimum shrinkage, does not crack, crumble or bloat. It keeps well on the bench and in the container . . . is odorless.

Use Fireite for mounting or repairing heating equipment—for setting ash pits and fire pots, doors, dampers and other places where sealing is necessary. With Fireite there is less danger of costly call-backs for re-sealing.

Write for free 4 lb. sample

Let us send you a can of Fireite Furnace Cement and a copy of folder RC-7A. Simply write giving your name and the name of your company. Address Johns-Manville, Box 290, N. Y.

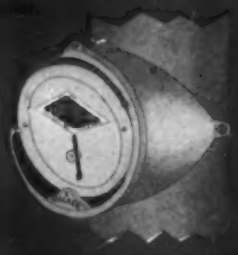
*Reg. U. S. Pat. Off.

Johns-Manville FIREITE asbestos furnace cement

It Takes WALKER DRAFT CONTROLS *To*

WALKER FUEL SAVER TYPE 31-K AND 31-C WITH STOVE PIPE TEE JOINT

Made from 740,000 units of these famous WALKER Regulators have been furnished to the fuel users of America. Furnished in sizes 3" to 7" with Tee joint—to 10" without.



WALKER FUEL SAVER TYPE NO. 34

Automatic proper draft regulation under all conditions for furnace boiler, stove or hot water heater. Domestic sizes 6" to 20" inclusive. Furnished with or without collar, in Aluminum Ring and Cadmium Plate finish.

COMMERCIAL AND INDUSTRIAL FUEL SAVER DRAFT REGULATOR

Walker makes a full line of industrial controls. Sizes 16" to 36" inclusive, made of heavy cast ring with dam-dover flanged steel plate with adjustable ball-bearing construction.

SATISFY CUSTOMERS!

—And you'll feel satisfied too, that you have given your customers the BEST FOR LESS whether you are a manufacturer or a seller of Space heaters & heating equipment.

GUARANTEE ECONOMY

—On the Oil burners you make or sell, you can guarantee the economy of their operation by specifying and supplying as standard equipment, WALKER DRAFT REGULATORS.

INSURE PERFORMANCE

WALKER DRAFT REGULATORS are the best and cheapest insurance that every Stoker installation will be completely successful.

—WRITE TODAY for full details – prices and delivery.

WALKER MFG. & SALES CORPORATION

A PACKAGE OF PROFITS
that dealers are CASHING IN ON!

- Completely assembled, factory wired; ready for quick, easy, low-cost installation!
- Stainless steel patented "Wide Flame" oval burner with Miniflow Pilot!
- 16-gauge steel airtight combustion chamber!
- Operates efficiently on natural chimney drafts as low as .045 inch! (Forced draft optional.)
- 1/6 HP long-hour motor, over-size blower, for maximum heat distribution!
- 20-gauge steel casing!
- Double inner liner prevents wasted heat radiation . . . outer casing is never over room temperature!

THE COMPACT, ECONOMICAL OF-974 *Lonergan* OIL FURNACE

Especially designed for low-cost housing projects AND ALL small home heating! Compact design, high heat output with minimum operating cost. The most wanted oil furnace on the market!

For distributors, contractors, engineers, builders, here's a unit with APPROVED 74,000 BTU COMMERCIAL STANDARD RATING (LISTED BY UNDERWRITERS . . . COMPLIES WITH COMMERCIAL STANDARD CS104-46). Exclusive, patented "Wide Flame" *stainless steel* oval burner! *Miniflow Pilot burns 42 hours on one gallon of fuel!* This 55¾" x 31" x 18¾" *complete* furnace comes in smart French Gray enamel, baked on. Ideal for low-ceiling basements, utility rooms! With directional flow vane plenum chamber, excellent for heating garages, schools, restaurants, groceries, etc. Made by Lonergan, established leader in the heating field for over 16 years!

LONERGAN MANUFACTURING COMPANY • ALBION, MICHIGAN

Lonergan's factory at Albion, Mich. 220,000 sq. ft. of floor space devoted to manufacturing top quality small home heating equipment.

Descriptive circular gives profitable details on compact OF-974 Lonergan Oil Furnace! The facts are amazing, the performance astounding! *Your* answer to efficient, trouble-free installation for low-cost housing projects and single homes. Write today for FREE circular!

LONERGAN MANUFACTURING COMPANY, DEPT. 124
ALBION, MICHIGAN

Gentlemen:

Please send me, without obligation, the circular describing the Lonergan OF-974 Oil Furnace!

NAME_____

NAME OF FIRM_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Service is more than machinery

HERE at Delco Products we recognize the importance of modern machinery. The completeness of our up-to-date mechanical facilities attests to that. Physically, we're more than equal to the swift production pace manufacturers are setting today.

But Delco Products also believes there is an ingredient far more integral to service than even the finest machines. It's a human element—the faculty of regarding each customer as an individual. It's an awareness of his particular requirements, and the disposition of all our resources to help meet them.

That's why Delco Products is organized primarily to accommodate our customers. That's why our scheduling procedures are flexible enough to handle last-minute changes in design or quantity.

And that's why appliance manufacturers who require quality motors produced in quantity trust Delco to deliver.

DELCO MOTORS

DELCO PRODUCTS DIVISION, GENERAL MOTORS CORPORATION, DAYTON, O.

Sales Offices: CHICAGO • CINCINNATI • CLEVELAND • DETROIT • HARTFORD, CONN.

SEE THE DELCO MOTOR DISPLAY
BOOTH 758, NATIONAL OIL HEAT EXPOSITION

for the newest and most sensational Oil Furnace for small, low-cost homes, see

QUAKER

BOOTH 323, MECHANICS HALL

BOSTON, MASS.

OIL HEAT EXPOSITION, MAY 16-20

OR WRITE TO

QUAKER MFG. CO., 223 W. ERIE ST., CHICAGO, ILL.

HEAT *Alone* IS NOT ENOUGH!

Discriminating home owners demand clean, correctly humidified indoor warm air without its usual irritating dryness . . . air free of harmful bacteria. The Brundage AIR-RENEWER opens a new field of sales for you!

To enable home owners, present and future, to enjoy their indoor living during the heating season, in an atmosphere of greater comfort with the utmost in protection to their health and property . . . the Brundage Company, Kalamazoo, Michigan, presents their newest product, the Brundage AIR-RENEWER.

Brundage AIR-RENEWER, Model 713A

The Brundage AIR-RENEWER cleans the air, purifies, humidifies and circulates it throughout the house in an imperceptible movement. The Brundage AIR-RENEWER is the only product of its kind on the market offering as a central station an all-utility unit . . . compact . . . automatic . . . self-adjusting, trouble free. It is presently available in three models for operation with all types of heating systems, such as gravity, forced-air or radiator heated homes.

Families are definitely aware of the dry, irritating condition of the warm indoor air during the winter months. Air filled with dirt, dust, lint and other impurities is responsible for carrying bacteria and unseen irritants causing many common ailments.

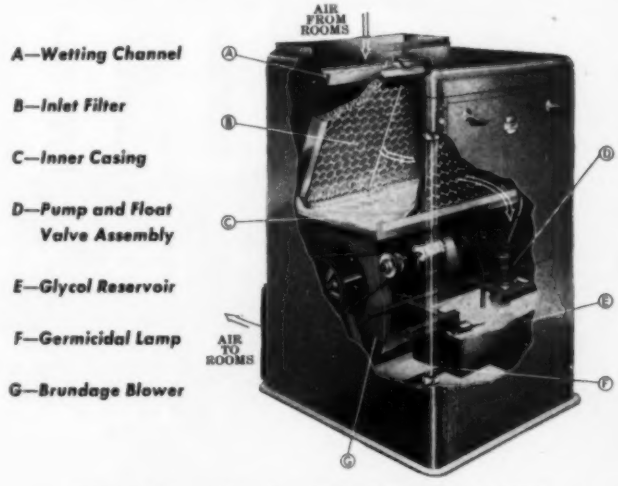
Medical authorities have proven that humidity is the guardian of health. Properly controlled water vapor content prevents excessive dryness of indoor air which directly affects the mucous membranes of the nose and throat, thus weakening our natural resistance to respiratory diseases.

The Brundage AIR-RENEWER's design is based on a thorough comprehension and the correct interpretation of known chemical and electronic applications for the practical and proper treatment of warm indoor air. The use of triethylene glycol for the control of humidity, for its sterilizing action and its power to dissolve dirt and clean the air, is well established.

Incorporated in the Brundage AIR-RENEWER is powerful ultra-violet light . . . bathing the airstream with sunshine . . . that spells death to air-borne bacteria. This is the first time germicidal lamps have been designed into a unit to obtain their highest rated efficiency.

The AIR-RENEWER's design highlights simple and trouble-free operation. The extraordinary chemical liquid, Brundage Glycol Solution, not only takes the place of the humidistat but means lime-free operation. The owner, by simple adjustment of a setscrew, can regulate the humidity from 20 to 50 per cent. Once set, the desired humidity is automatically maintained.

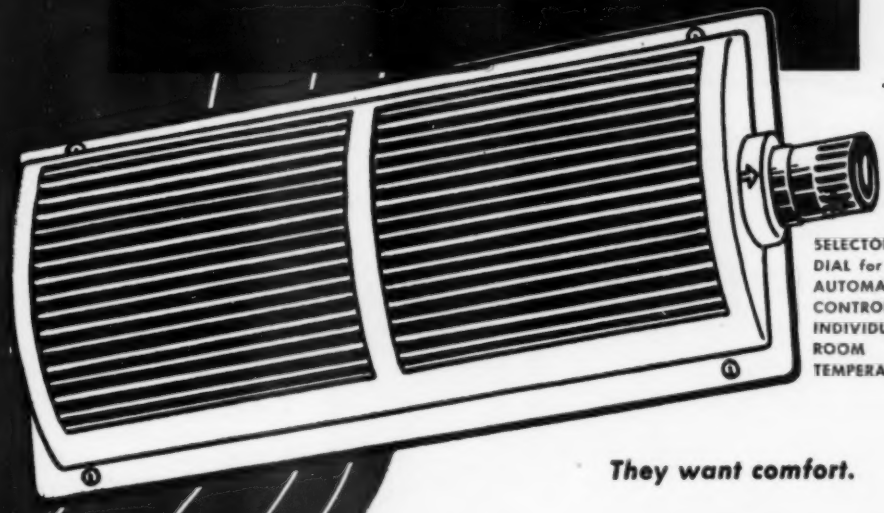
HOW IT OPERATES — Air from the house entering the inlet filter of the AIR-RENEWER, passes through the glycol-water saturated filter. Here the proper amount of water is added to the air and all impurities (dust, dirt, lint, and other foreign particles) are lost to the dirt-disintegrating glycol. The air now passes through the second filter element, an eliminator mat, which removes any entrained liquid droplets. The air is now bathed by powerful germicidal lamps before passing through the quiet Brundage blower. The air (after being heated) is returned to the rooms . . . cleaned of impurities, properly humidified and free of harmful bacteria . . . completely renewed.



Cutaway View — Brundage AIR-RENEWER, Model 713A

For complete information, literature and prices, together with the Brundage merchandising plan that opens an entire new field of sales during the months ahead . . . write to: *BRUNDAGE COMPANY, 608 North Park Street, Kalamazoo, Michigan.*

ALL YOUR *forced warm air* CUSTOMERS WANT THESE...



SELECTOR DIAL for AUTOMATIC CONTROL OF INDIVIDUAL ROOM TEMPERATURE

They want comfort.

THEY WANT TO SAVE SCARCE, EXPENSIVE FUEL.

Then, they want Dole Thermostatic Air Controls for automatic individual room temperature control plus positive fuel economy.

DOLE THERMOSTATIC AIR CONTROLS

Completely self-contained, Dole Thermostatic Air Controls are easy to install — no wires to run — no bulbs to locate. They replace standard registers.

Very sensitive, Dole Thermostatic Air Controls are the simplest, easiest way for the service man to balance the whole system once and for all.

THE DOLE VALVE COMPANY

1933A Carroll Avenue • Chicago 12, Illinois

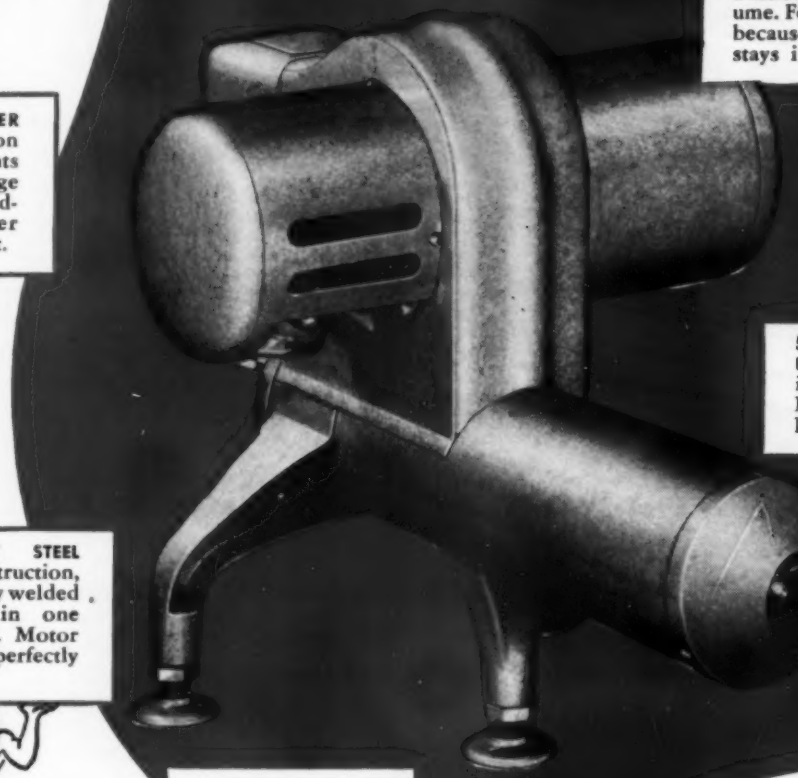
Representatives in Principal Cities

Control with Dole Also Air & Vacuum Valves for Steam Systems, Hot Water Air Valves, Water Mixers, etc.

FLUID HEAT *construction . . .*

. . . minimizes costly service problems!

. . . makes every buyer a satisfied customer!



1. TRANSFORMER positioned *high* on burner. Prevents high water damage with corresponding transformer replacement cost.

2. DISCHARGE AIR REGULATION insures constant velocity of combustion air at any volume. Fewer call-backs because Fluid Heat stays in adjustment.

3. HEAVY STEEL PLATE construction, electrically welded together in one rigid unit. Motor and pump perfectly aligned.

4. ADJUSTABLE LEGS permit 3-point adjusting for uneven floors. No need for shimming up. Provide a firm base for smooth running.

5. STAINLESS STEEL NOSE PIECE drops in temperature immediately on shut-down. Reduces coking of nozzle. Lowers service costs.

6. WIDE - AWAKE RESEARCH laboratories keep you ahead of competition with latest styling, new features, top-notch performance.

WHEN YOU SELL FLUID HEAT YOU SELL QUALITY

High quality materials and construction are typical of every Fluid Heat unit. Together with outstanding design features, widest selection of models and sound prices, they mean profitable sales for you. Write today for full details on a Fluid Heat Dealer Franchise to:
FLUID HEAT OIL BURNER DIVISION, Anchor Post Products, Inc., 6720 Eastern Ave., Baltimore 24, Md.

fluid heat
OIL BURNER

PRESSURE BURNERS
ROTARY BURNERS · BOILER BURNER UNITS
AIR-CONDITIONING FURNACES

"WORLD'S ECONOMY CHAMPION"
Manufactured by Anchor Post Products, Inc.
Baltimore 24, Md., Established 1892

*CASTOMATIC is the copyright name for a completely new line of Solders produced only by Federated Metals.

CASTOMATIC is a patented process for casting metal in a completely automatic and closed system.

CASTOMATIC is the product of many years of research and development by Federated's experienced metallurgists and engineers. It offers unique advantages in metal structure and in shop work. It will be available soon in bar solders of all compositions.

Watch for detailed description of CASTOMATIC in later issues of this publication.

Federated first in the new ferrous field FMD

Federated METALS

Division of American Smelting and Refining Company, 120 Broadway, New York 5, N. Y.

Home-Heating Dealers . . .

Your Keys to greater PROFITS!

General Motors—the key to greater value—value which is recognized by users of automotive and household appliance products the world over!

Delco-Heat—the key to customer acceptance—acceptance of Delco automatic home-heating products for their quality and dependability!

These keys will *open doors for you*—the doors of homes that recognize value—that want only the finest in automatic heat!

And these keys are emblematic of the *greater profits* that can be yours with a General Motors Delco-Heat franchise:

1. You'll be selling dependable quality products that your prospects know and trust—a name that's a household word—a name that has always been synonymous with *value*.

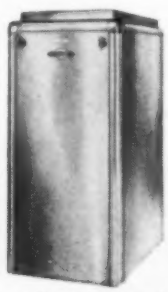
2. You'll be allied with a manufacturer whose research and engineering facilities will keep the products you sell *out in front*.

3. You'll have the help of a sales promotion program that really works—aggressive advertising and alert merchandising-helps that are geared to *meet your needs*.

For full information concerning the many advantages of a General Motors Delco-Heat franchise, write to Delco Appliance Division, Dept. AA-4, General Motors Corp., Rochester 1, New York.

A Full Line of Automatic Heating Equipment

GENERAL MOTORS DELCO-HEAT



Oil and gas-fired Conditionairs

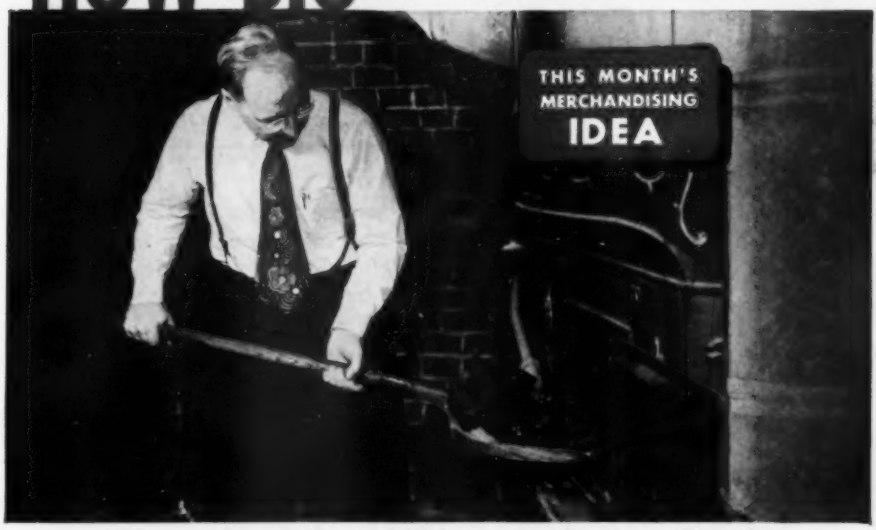
Conversion Oil Burners

Oil-Fired Boilers

Automatic Coal Stokers

Also manufacturers of Delco Water Systems for farms and homes — Fractional Horsepower Electric Motors — Electric Automobile Clocks.

HOW BIG IS THE HAND-FIRED MARKET

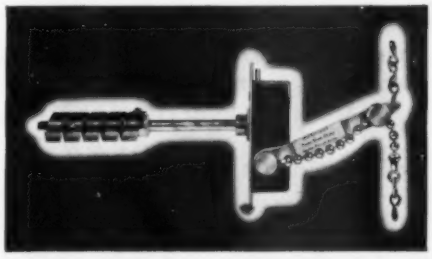


Home-makers need and will buy controls that will make their hand-fired furnaces safer, more efficient, easier to tend.

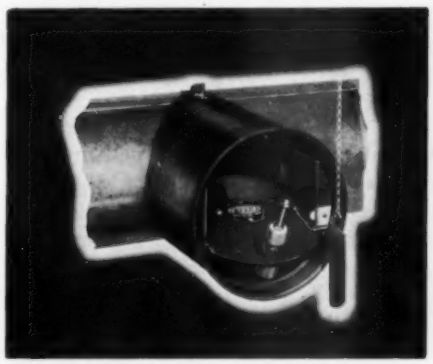
IT'S 8,000,000 STRONG AND CAN BE SOLD

Fuel Wasters

Hand-fired furnaces, not equipped with automatic controls, waste fuel and burn homes. And there are an estimated 8,000,000 in use today. These are furnaces we hope one by one to convert to automatic firing. But meantime, at a profit to you, you can make these hand-fired furnaces safer, more efficient, more comfortable by the addition of simple, inexpensive controls.



This new safety control automatically closes furnace damper when bonnet temperature gets too high. Manufactured by Field Control Division.



The "Barochek" is a combination draft control and check damper. Cuts fuel costs up to 25%.

Draft Regulation Inadequate

Major weakness of the hand-fired furnace is inadequate draft regulation. This causes fuel waste, over-heating, undue furnace wear. A barometric draft control corrects this. One such control, the "Barochek"* was designed exclusively for hand-fired furnaces, is a combination check damper and barometric draft control. It sells installed for about $10. For the same market, one manufacturer, the Field Control Division, recently introduced a safety control which automatically closes the ash pit door damper when bonnet temperature gets dangerously high.

Sold Over-The Counter

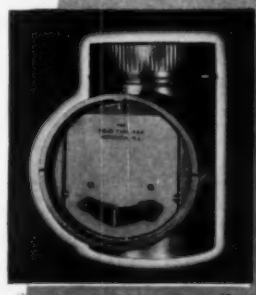
Many such accessories can be installed by the home-maker and represent a quick, easy and profitable packaged sale. For an extra profit, and as a community service, help these hand-fired furnace owners enjoy safer, more comfortable, more efficient heating.

Newest damper motor set, Field Fuel Saving System provides many of the most important advantages of fully automatic heat at a fraction of the cost.

field *means finest in* **DRAFT CONTROLS**
. . . . And There's A Field Control For Every Need!

field TYPE M

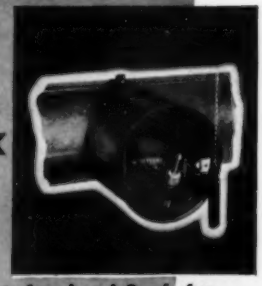
First and finest for all types of automatic heating equipment.



field TYPE R

First and finest for all types of space heaters and ranges.

field BAROCHEK



First and finest for hand-fired furnaces and boilers, a combination check damper and barometric draft control.

field FUEL SAVING SYSTEM

A newer, finer, more trouble-free damper-motor set with automatic spring return, built-in limit control, "stoke-switch", and booster fan switch.

WRITE for proof of why Field is First and Finest — first choice for the finest in heating equipment.

field CONTROL DIVISION
H. D. CONKEY & COMPANY
Mendota, Illinois

Visit the FIELD Booth No. 377, O. H. I. Exhibition, Boston, May 16-20

Presenting the

New ZEPHYR Line

Portable Electric Drills

ZEPHYR 500 SERIES
½-Inch Electric Drills
No. 500.....$29.65
(With Jacobs Hex Chuck)
No. 510.....$34.65
(With Jacobs Geared Chuck)

ZEPHYR 1950 SERIES
¼-Inch Electric Drills
No. 1950-G....$19.95
(With Jacobs Geared Chuck)
No. 1950-H....$17.95
(With Jacobs Hand-Tite Chuck)

Your best bet . . . either one or both

These drills are the latest in proved, streamline design. In its capacity range, each represents a big advancement in the combination of high power, quality and refinement in construction, and long-life performance. Due to the shape, size, and light weight, each offers a new handling ease and convenience that readily appeal to the user. They are your best bet for maintenance, production, and utility drilling operations.

See your supplier for complete information.

★ *Write for new Booklet on Portable Power Tools.*

PET TOOLS Portable ELECTRIC TOOLS, INC.

Fractional HP Motors • Electric Drills • Polishers • Saws • Sanders
Spin-A-Brush • Spraymaster

256 W. 79th Street, Chicago 20, Ill.

NEW LITERATURE

Use Coupon on Page 123

Advertising Mat Service.....231

A new general mat service publication, consisting of a 40-page booklet containing advertising suggestions, radio shorts, and publicity releases, is being offered for the convenience of heating contractors in promoting American-Standard products in their local communities. This is a free service; it includes general information on proper methods of advertising, some suggested advertisements and copy for radio announcements, direct mail ads, and suggestions on how the contractor may benefit from publicity.

The publication, in the form of a tabloid newspaper, contains 100 complete advertisements in sizes running from one to five columns in width. The mats or electros for these ads are offered free for use in local advertising campaigns. They are available through the manufacturer's wholesale distributors. In addition, dealers may obtain product illustrations, attention-getters, logotypes, reverse logotypes, and a variety of direct mail aids for use in producing their own advertisements, or for special use in sales promotion programs.

The mats and electros illustrated may be ordered by number.

American Radiator & Standard Sanitary Corp., Pittsburgh, Penn.

Fan Catalogs.....232

Two new catalogs, one devoted to a residential and the other to an industrial and commercial line of fans, contain descriptive copy, dimensions, specifications, and numerous photographs on 17 types of ventilating and cooling equipment. The units included vary in size from 12 to 60 in. and in output from 1,000 to 32,000 cfm.

Fully described are several types of window fans for use in the home, office, shop, or store; attic type fans for home cooling, for both vertical and horizontal mounting; industrial fans, belt driven and direct drive; complete penthouse units; paint spray booth fans; and blowers and exhausters for various industrial applications. Many of the fans are available in two speed and also with explosion proof motors.

Chelsea Fan & Blower Co., Inc., 1206 Grove St., Irvington, N. J.

Duct Insulation.....233

A four-page folder describes the construction and methods of application of a new insulating material which is being introduced to the field under the name of Insuliner. It is recommended as a lining for breechings, flues, ducts, and is said to be flexible enough for use in any contour.

The bulletin in addition to showing details of construction, contains instructions on estimating requirements and complete information on prices and methods of ordering.

M. H. Detrick Co., 111 W. Washington St., Chicago 2, Ill.

NEW 200,000 BTU

OIL-FIRED SUSPENDED FURNACE

Companion model of the Gilbarco 100,000 BTU Suspended Unit, this new furnace of double the capacity will **more than quadruple** the opportunity for sales of suspended installations.

The tremendous demand for suspended furnaces has been proven by the smaller 100,000 BTU model, introduced several months ago. Now with this new unit the avenue is open to the hundreds of thousands of stores, schools, garages, service stations and similar buildings which require greater capacity than the 100,000 BTU Furnace can supply.

The dealer who doesn't carry a line of suspended furnaces is missing out on the units in which interest is keenest in the oil heating field today. Why not get into this profitable market? Write for full information on the Gilbarco Suspended Furnaces of 100,000 and 200,000 BTU capacity, both equipped with the exclusive feature that makes selling easy—the famous fuel-saving Economy Clutch.

Gilbarco

THE OIL BURNER WITH THE ECONOMY CLUTCH

Gilbert & Barker Manufacturing Company
West Springfield, Mass., and Toronto, Canada

CONVERSION AND REPLACEMENT BURNERS • BOILER BURNER UNITS • WARM AIR CONDITIONERS • INDUSTRIAL BURNERS

NEW LITERATURE

Use Coupon on Page 123

Packaged Chimney.....234

Descriptive data sheet, specification sheet, and installation instructions are available on a chimney which is recommended for use with any fuel in one, one and a half, and two story houses.

This chimney, marketed as the Thulman Chimney, is said to produce maximum available draft in a matter of seconds. It consists of a vitreous enamel coated steel flue, jacketed by two concentrically placed aluminum ducts, spaced away from the flue and from one another by a stainless steel spacing device.

Since it is extremely light in weight and has a consequent low heat capacity, the chimney not only heats rapidly but also reduces "stand-by" losses when the device shuts off by rapidly cooling and slowing the flow of cooling air through the heating system.

The manufacturer claims the Thulman chimney is completely safe when heating systems are operating at excessive firing rates because the escape of extra heat from the flue into the inner duct merely increases the temperature of air in that duct and causes a rapid flow of air into the outer duct. It is approved by the Underwriters' Laboratories, Inc., for installation with "zero" clearance from combustible materials.

Chimney Sales Co., Washington 1, D. C.

Machinery Catalog.....235

Sheet Metal Machinery Catalog No. 22 is available to help shop owners and metal workers select machines best suited to their particular needs. The inside front cover of the catalog summarizes the important design features of the whole line of power squaring shears, and an index on the same page directs the reader to sections devoted to descriptions of power squaring shears, foot operated squaring shears, slip roll formers, and combination machines.

In the text, each model of shears and forming machines is clearly illustrated and complete details are given on capacities and construction features.

Specification sheets for squaring shears and combination machines afford a ready source of reference for determining sizes and capacities of all models.

Wysong & Miles Co., Greensboro, N. C.

Dust Control Folder.....236

Actual installations of dust collecting equipment are presented in photograph form in an eight page folder. The pictures included show a few of the many ways in which dust filters may be installed for the collection of a great many kinds of dust and for the disposal of dust in various ways.

The dust filters discussed are used extensively for the suppression and collection of industrial dusts, resulting in improved working conditions, cleaner shops, and cleaner products.

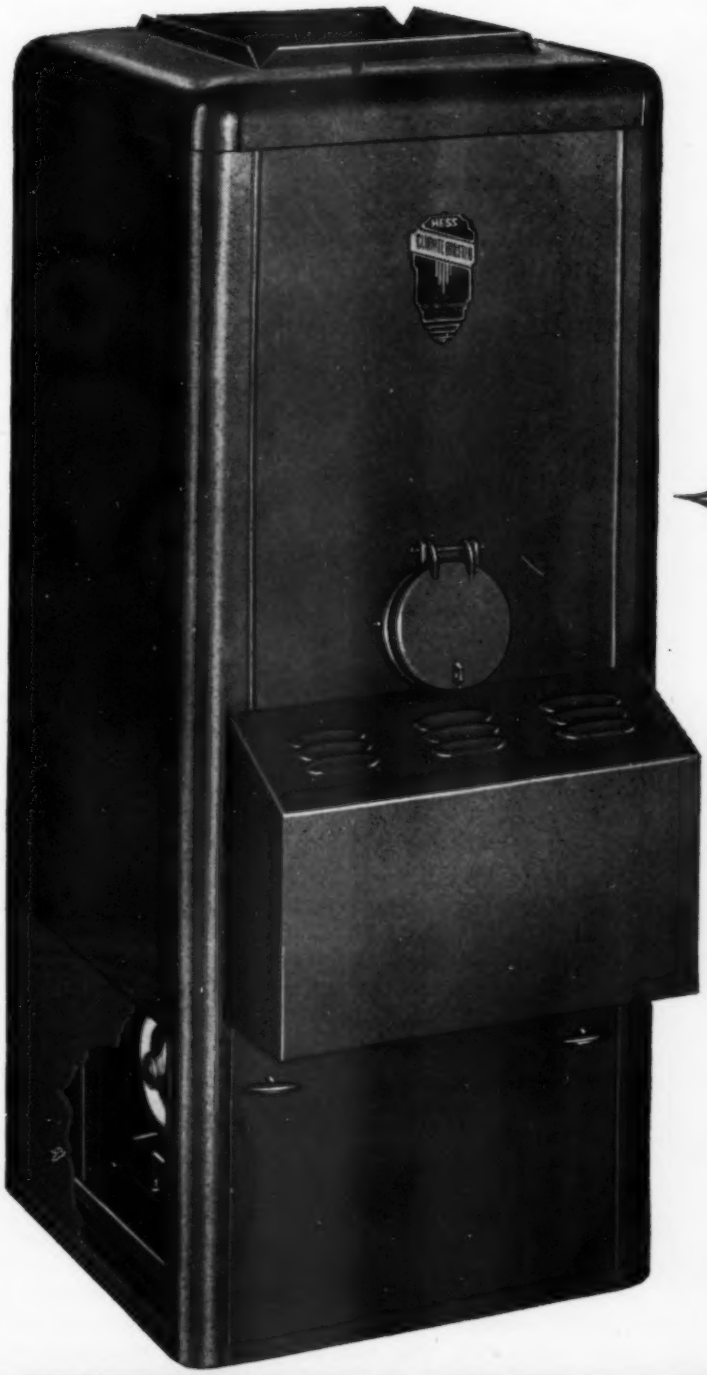
W. W. Sly Manufacturing Co., 4700 Train Ave., Cleveland 2, Ohio.

REPEAT PROFITS
GENERAL FUEL OIL FILTERS WITH THE RED TOP FOR LARGE FURNACES OR BOILERS • HOT WATER HEATERS • SMALL FURNACES SPACE HEATERS
Model 1A-25. 4¾" High. 3½" Dia. Filter Unit Surface 31 Sq. In. ⅜" Pipe Openings.
Model 2A-700. 6¼" High. 4-5/16" Dia. Filter Unit Surface 72 Sq. In. ⅜" Pipe Openings.
Model 2A-300. 9-1/16" High. 5½" Dia. Filter Size 63 Cu. In. ⅜" Pipe Openings.
General FUEL OIL FILTER DE LUXE MODEL 2A-300
YEARLY DIVIDENDS
After making the original sale of a GENERAL FILTER, dealers make a dividend each year through the sale of replacement cartridges. The customer, of course, returns to the dealer who made the original installation —and installation is so simple that it can be made in less than two minutes. If you haven't already done so, investigate the profit possibilities of GENERAL FILTERS. See that each one of your customers has one.
WRITE FOR THE NAME OF YOUR NEAREST JOBBER
GENERAL FILTERS INCORPORATED
GENERAL FUEL OIL FILTER
12890 WESTWOOD AVE. DETROIT 23, MICHIGAN
CANADIAN FACTORY BRANCH: GENERAL FILTERS CANADA, LTD., 173 STRACHAN AVE., TORONTO 3, ONTARIO

COMPACT → ONLY 25 INCHES SQUARE 61½ INCHES HIGH!

EFFICIENT → 80,000 B.T.U. OUTPUT

VERSATILE → UTILITY ROOM, BASEMENTS, SPACE HEATING

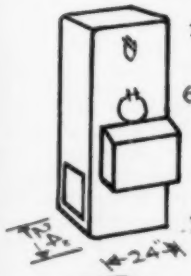


IT'S HERE!

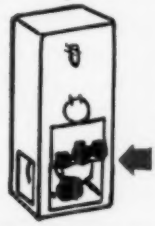
THE NEW HESS CLIMATE-MASTER "80"

COM-PACT OIL-FIRED UNIT

Everything in One Compact Cabinet



Fits in anywhere—specially designed for utility rooms, and small basements . . . ideal as a space heater. 80,000 B.T.U. capacity . . . for the majority of your installations.



Complete in one package!

Oil burner, controls, blower, humidifier—plus famous HESS square design—heat exchanger complete in one compact unit.

Hess helps you cash in on the small home market with its sensational new **CLIMATE-MASTER "80."** Easy to sell—easy to install—easy to service! Backed by Hess' 76 years experience in warm air heating. The perfect heating unit for today's small homes. Meets commercial standards CS 104-46.

Write today for details and prices on the Climate-Master "80" and the complete Hess line of heating equipment. Capacities to 1,200,000 B.T.U.

OUR 76th YEAR

The Hess Company

CHICAGO 50, ILLINOIS

SINCE 1873

NEW!
THE CHIEFTAIN
De Luxe
HOPPER MODEL
New, one-piece welded hopper adds strength, reduces vibration wear and noise. New, much larger capacity . . . 375 lbs. . . . lengthens time between hopper fillings considerably. New, double-end motor permits placement of fan to facilitate repair, if necessary . . . reducing maintenance time and cost. New, matched chrome-finish hardware adds to appearance and ease of handling. All other improvements are designed to make this new Deluxe CHIEFTAIN an unsurpassed value in its field!
CHOICE FRANCHISES NOW OPEN
For full descriptive literature on this . . . or any other product in the complete ANCHOR heating equipment line, write Anchor Division, Stratton & Terstegge Co. Inc., P.O. Box 311, New Albany, Indiana.
ANCHOR
OIL FIRED FURNACE
ANCHOR
OIL BURNER
ANCHOR
DOMESTIC BOILER
ANCHOR
GAS FIRED FURNACE
ANCHOR
COAL FIRED FURNACE
ANCHOR
America's Finest Heating Equipment

NEW LITERATURE

Use Coupon on Page 123

Expanded Steel Mesh 237

A new eight page bulletin offers engineering data including load deflection, air flow comparison, and free openings of both standard and flattened mesh types of expanded steel. The first two pages are devoted to facts about expanded steel mesh—its characteristics, fabrication, and uses. One of its principal uses listed is in construction of guards for machinery, ventilating fans, motors, etc. It is also recommended as an excellent reinforcement for concrete.

Specification pages include a list of sizes with dimensions and weights for both the standard and flattened mesh, and on the two following pages engineering data is listed in handy tabular form. The back cover includes description and engineering data on expanded metal grating, designed as an open flooring material.

The bulletin is generously illustrated with pictures of the mesh in use in its many industrial applications, as well as with detail shots of the various types of mesh, showing its construction.

Joseph T. Ryerson & Son, Inc., 8000-A, Chicago 80, Ill.

Anti-Rust Paint 238

Rustrem, an anti-rust paint, recommended for prolonging life of any metal equipment, is described in a bulletin which also lists the properties of other Rem paints, resistant to heat and chemicals.

Included are complete instructions for the use of Rustrem which can be applied right over rust without wire brushing, scraping, or sand-blasting. According to the manufacturer, the paint penetrates the rust layer, renders it inactive and seals the metal surface against further rusting. Available in black or aluminum, Rustrem is suitable for spray or hand application on any metal surface.

Among the many uses claimed for the paint are its application as a protective covering for metal roofing, gutters, spouts, water tanks, valves, and pipe.

Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio.

Fan Catalog 239

A new Master Fan catalog, Unit x6249, illustrates in color and describes in detail a complete line of fans. This 32 page catalog contains design and construction specifications with complete performance data on the various types of desk and stand fans, air circulators, ceiling fans, kitchen ventilators, exhaust, attic, and window fans offered by the manufacturer. Also included is detailed dimensional information for exhaust and ventilating fans and accessories. A reproduction of the manufacturer's guarantee appears on the outside back cover.

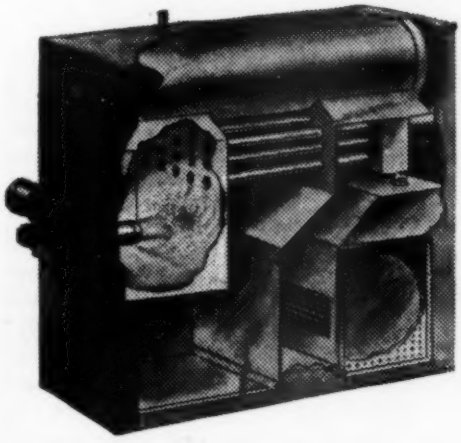
Readers requesting this catalog are asked to do so on company stationery. Requests should be sent direct to the manufacturer.

Emerson Electric Mfg. Co., St. Louis 21, Mo.

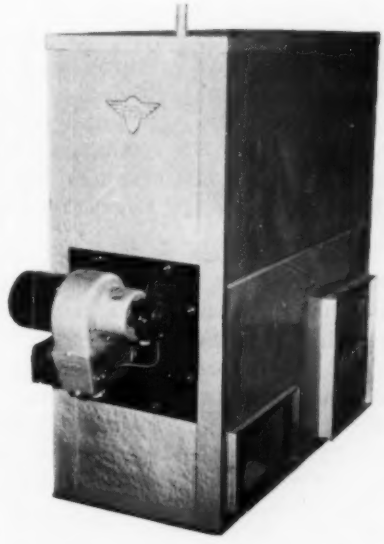
Forced Warm Air Invades Hot Water Market

Metropac Completes Winter Air Requirements

When a customer asks, "Why can't I have my forced air furnace supply my hot water?", the winter air conditioner dealer now has a logical answer—"You can have it with METROPAC, and real hot water storage right inside your furnace, too!"



Right photo shows conditioner with cabinet enclosure; manual handle for by-pass damper operation is on opposite side. Parts shown in left photo are: water storage tank, fire-tube heat exchanger, combustion chamber, burner mounting, opening for return air, by-pass damper axis and control mount, by-pass damper, opening for discharge of warm air.



Spotlighted at the recent Ninth International Heating & Ventilating Exposition, a new type of warm air conditioning furnace (METROPAC) featured a built-in provision for year-round domestic hot water firing. It is also designed for future installation of refrigeration coils for cooling.

Hot water heating in the METROPAC is accomplished through the use of a storage tank resting just above the fire-tube heat exchanger. Blower is at rear base of the Unit and draws air through filters, forcing it upward over heat exchanger and water storage tank thence downward to supply duct connections at front base. Both return and supply connections may be made on either side. A manually operated by-pass damper provides for direct blowing of air into supply ducts, by-passing the heat exchanger and allowing continual hot water heating during summer while blower furnishes the circulation of room air.

The new conditioner is available with a gun-type METROMATIC Oil Burner which features a removable head for easier servicing and to decrease the cost of replacement. The burner is suitable for installation with any type of automatic firing desired. Three sizes of furnaces are being made: 70,000, 120,000 and 180,000 Btu/hr output capacities at the registers. Automatic air humidification is furnished through the use of glass fibre wicks. Water heating is faster than that obtainable from the usual high-recovery type of standard gas or oil-fired heaters.

The presence of water stored within the furnace brings an external agent to absorb excess heat and maintain a counter-balance on the heating of air. The net effect is an amazing efficiency of operation. The constant temperature around the storage tank provides a source of immediate heat at the registers at any time, and taking the warm air from the bottom insures immediate cessation of heat when the thermostat is satisfied.

The Unit is fully insulated with one inch of glass wool which is covered with asbestos sheeting and faced with aluminum foil. This insulation eliminates any heat radiation from the METROPAC, winter or summer.

The slide-channel design of the Unit permits complete assembly in less than twenty minutes by one man. The plenum chamber is built-in.

The METROPAC is directly in the price class of any air conditioner when hot water is added.

See the Metropac at the Oil Heat Exposition at Boston, May 16-20 — Booth 213

IMMEDIATE SHIPMENT AVAILABLE—Write today for further information on franchises to

METROMATIC MFG. CO. **DEPT. A-4, EVERETT 49, MASSACHUSETTS**

WITH THE CONTRACTORS

DON REDDER, DAN DETERS, AND HARRY VANDER ZEE, all of Fremont, Michigan, have undertaken a partnership enterprise under the name of the Fremont Furnace Sales & Service and Sheet Metal Shop. The new firm, located in the rear of Redder Bros. Hardware, deals in oil burners and coal furnaces and handles sheet metal work.

BEN KOLBENSCHLAG, prominent sheet metal and heating contractor of St. Louis, Mo., recently resigned his post as treasurer of the Associated Sheet Metal, Air Conditioning and Heating Contractors of St. Louis, Inc., after 25 years of service.

The association presented Mr. Kolbenschlag with a certificate of life membership and a pen and pencil set. The gifts were presented at the annual installation dinner dance at the Edgewater Club on January 29.

LLOYD HOLCOMB of Fremont, Michigan and Harley Shafer of South Haven have formed a partnership and purchased the sheet metal business known as the Home Heating and Sheet Metal Shop.

Mr. Shafer previously owned a sheet metal shop in South Haven for four years and has been in the sheet metal business for 38 years. He has started to modernize the Fremont shop and will employ six or seven men. The name of the business will remain unchanged.

Mr. Holcomb worked for Sinclair Refining Co.

Frank E. Ort 1896-1949

FRANK E. ORT, 53, one of the most widely known sheet metal and roofing contractors in the Cincinnati area, died in Bethesda Hospital in Cincinnati on March 8, following an illness of 10 days. He had operated the Frank A. Ort Sheet Metal and Roofing Co., 323 East Third St., for 20 years, having succeeded his father, Frank A. Ort, who founded the company.

Mr. Ort was a veteran of World War I. He was treasurer of the Cincinnati Sheet Metal Contractors' Association, and a member of the American Legion, the Lower Cincinnati Business Men's Club, and the I.O.O.F.

Survivors include his parents, his widow, a son, two daughters, and a sister.

W. R. Etie 1889-1949

W. R. ETIE, well-known sheet metal contractor of Houston, Texas, died on February 23, at the age of 60. He had resided in Houston for 50 years and for the past 38 years was owner and operator of the Etie Sheet Metal and Heating Company.

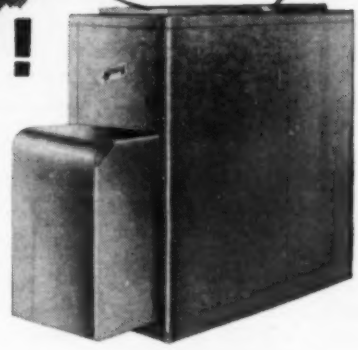
Mr. Etie was a thirty-second degree Mason, and took an active part in Masonic activities. He was a member of the Houston Chamber of Commerce, the Associated General Contractors, the National Association of Sheet Metal Contractors, and was an associate member of the American Society of Heating and Ventilating Engineers.

Surviving are his widow, one son, and three daughters.

Create a 'Comfort Zone' FOR YOUR CUSTOMERS...

with this COMPLETE

PACKAGED Home Heating UNIT!



The HACKER Oil Burning CABINET FURNACE is Designed and Engineered for the Average American Home . . . yet is Compact enough to fit easily in the smaller home. It's the First Choice of the Average home owner and of "Profit Minded" Heating Contractors.

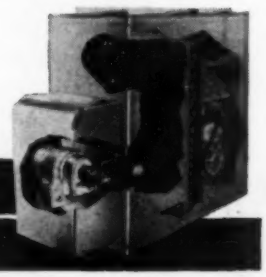
100,000 B.T.U. at the Bonnett! Requires only 10 sq. ft. of floor space!

COMPACT . . . High in Efficiency, Lower in first cost . . . Longer in years of Service. Meets Competition for Added Profits! Cabinet length 50½", Overall 62", Width 25", Height 52". EYE APPEAL . . . finished in beautiful Baked Metalescent.

Shipped Completely Assembled . . . two men can handle easily. Heavy steel bottom eliminates need for cementing. Nationally known Gun Type Oil Burner furnished with complete set of 4 controls.

Write for the name of the HACKER Distributor nearest you.

Stainless Steel Combustion Chamber, 12" blower, ¼ "h.p. motor, air filter, Automatic Drip Humidifier and automatic Draft Control. Shipping weight approximately 525 lbs.



HACKER FURNACES

DEPT. D WATERLOO, IOWA

Whisper Quiet Model

New and Unique!

JOHN ZINK
UNIT HEATERS

Available In Two Models

WHISPER QUIET MODEL—For installations requiring quiet operation. More Head Room — Compact Design and More Heat From Gas Burned. A. G. A. approved for natural, manufactured, mixed or LP gases. Fully equipped with automatic Controls.

HURRICANE MODEL — For Industrial Installations. This model is also compact in design, offering more Head Room and More Heat from Gas Burned. Will heat 40′ x 80′ space. A. G. A approved for natural, manufactured, mixed or LP gases. Automatic controls.

100,000 Btu/hr.

Both Models finished in Toast Tan Crinkle Enamel Baked on. Adjustable Louvers.

Write for Literature

John Zink Company

4401 South Peoria

TULSA, OKLAHOMA

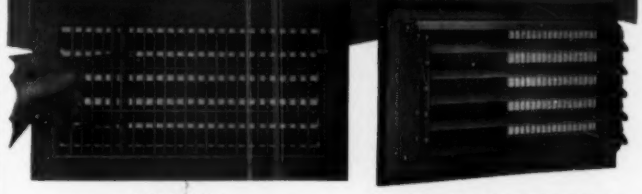
New York - Salt Lake City - Houston - Los Angeles

You can get

DIRECTED AIR FLOW

at any angle with

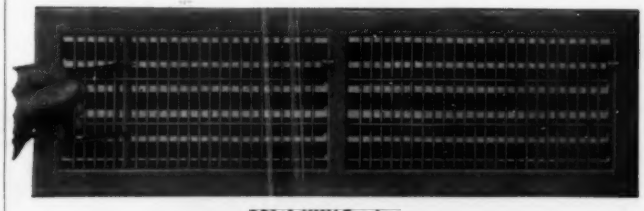
INDEPENDENT "Fabrikated" AIR CONDITIONING REGISTERS



321-A HMV

Rear View Showing "HMV" Valves

Every grille bar adjustable individually—before or after installation



321-A HMV Tandem

Any direction of air flow—right, left, up, down and any combination—is easily obtained with "Fabrikated" Style No. 321-A HMV air conditioning registers, for residence or commercial installations, on sidewalls or ceiling. The face bars are adjustable to right or left; valves on the back are adjustable to direct the air flow up or down; valves may also be fully closed, and are connected to open or close in unison.

The angles of deflection and the combinations to be had are practically unlimited. Adjustments for directed air flow may be made before or after installation. Grille bars are held firmly in place and will not vibrate or rattle.

"Fabrikated" registers are available in sizes from 8 x 4″ to 48 x 24″, including tandem style. Special sizes can be made without special die set-up charges.

Write for Catalog No. 48.

Always Leading—Always Progressing

THE INDEPENDENT REGISTER CO.

3747 E. 93rd STREET · CLEVELAND, OHIO

INDUSTRY ITEMS

COMFORT PRODUCTS CORP., Dallas 2, Texas recently held its first distributors meeting. The group was welcomed by J. B. Spitzka, president of the company and he gave them a brief history of the company, starting with its organization only ten years ago. His main message was an appeal to the distributors to set up organization that would be capable of selling the potential market for the products of the company. Some interesting sales points were presented and several new models of equipment were displayed for the first time.

J. B. Spitzka

T. S. House

THORNTON S. HOUSE has been appointed sales manager, warm air heating division, Richmond Radiator Co., it was announced recently by John J. Hall, vice president and general sales manager of that company. Mr. House will make his headquarters at the general sales offices of the Richmond Radiator Company located at 10 East 47th Street in New York City. Prior to joining Richmond, House was sales manager for the Niagara Furnace Division of the Forest City Foundries Co. of Cleveland, Ohio. With this company for ten years, he covered the entire northeastern United States. Before that he was sales agent and jobber, in the Syracuse area, for the Fox Furnace Division of American Radiator Co. Mr. House also organized The House Sheet Metal Co. of Syracuse, New York, where he obtained his practical experience in heating layout and installation work as well as in selling.

GENERAL OIL BURNER Corp. has announced the appointment of the Milwaukee Oil Heating Engineers, 2444 W. Capitol Drive, in Milwaukee as Wisconsin state representative. They will handle and stock the complete line of General Automatic conversion burners, winter air conditioning furnaces and boilers.

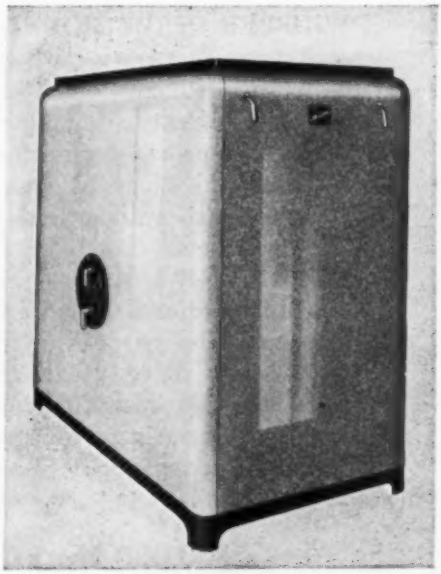
L. F. LAWRENCE has been promoted to branch manager of the Charlotte, North Carolina, office of the Minneapolis-Honeywell Regulator Co., Thomas McDonald, vice president, announced in Minneapolis. Mr. Lawrence succeeds Karl Selden, Jr.

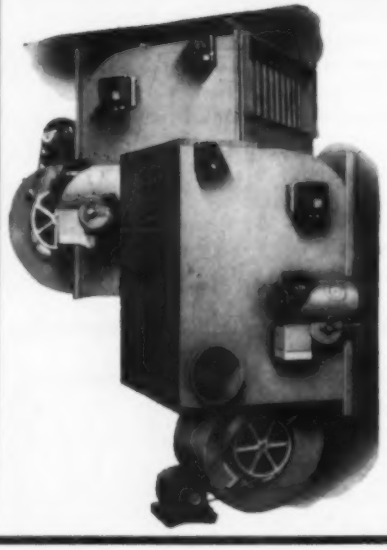
Mr. Lawrence, who attended Georgia Tech, joined the industrial instrument division of the Honeywell company in 1935. After a training course, he was assigned to the Atlanta office as a field engineer and in 1941 was transferred to the sales staff in the same office.

TJERNLUND QUICK HEAT

DOMESTIC AND INDUSTRIAL HEATING UNITS

EASIER SALES AND MORE SATISFIED CUSTOMERS





The variety of models to suit practically every heating purpose makes QUICK HEAT a recognized profit builder for warm air heating dealers. Practical application of sound engineering principles combined with extensive experience has produced this highly recognized line of superior equipment. Performance and convenience of these units proves business building quality to dealers handling this line.

Overhead Units For Ceiling or Wall Mounts

READY FOR INSTALLATION

Floor units are mounted on legs to prevent rusting of bottoms and eliminate air leaks. Factory assembled in attractive casing with new type heat saver and specially designed gun type oil burner. Convenient and quick installation.

Dealers: WRITE FOR DESCRIPTIVE LITERATURE

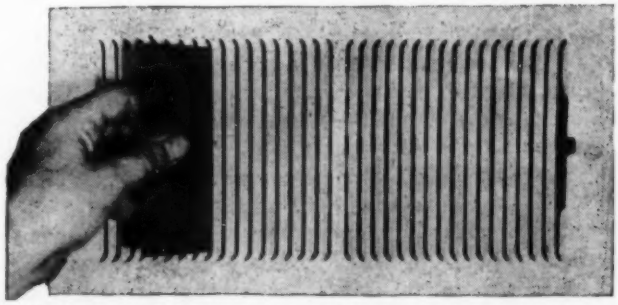
TJERNLUND MFG. CO.
2140 Kasota Ave. St. Paul 8, Minn.

SHALLOW THIN-MAN REGISTER

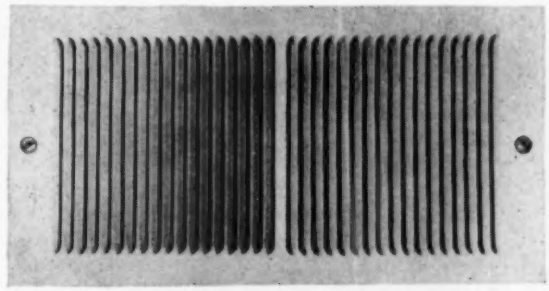
TRADE MARK

TEN DAY DELIVERY FOR STANDARD SIZES
(UNDER 100 PIECES)

DESIGNED FOR RESIDENTIAL AIR CONDITIONING



STYLE 8TM—SELECTIVE UP - STRAIGHT - DOWN DEFLECTION FROM SHUTTER. RIGHT AND LEFT DEFLECTION FROM FACE.



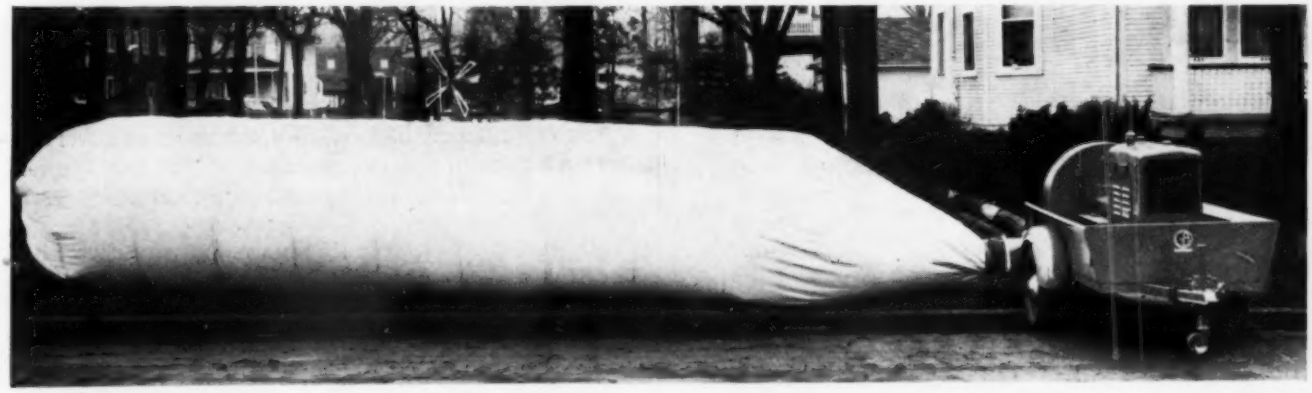
STYLE 8—GRILLES TO MATCH STYLE 8TM REGISTERS.

Write today for your copy of our complete catalog

REGISTER & GRILLE MFG. CO., Inc.

66 BERRY STREET BROOKLYN 11, N. Y.

THE NEW GENERAL GIANT FURNACE CLEANER — POWERFUL, ECONOMICAL, EFFICIENT



The **GENERAL** Giant Furnace Cleaner can be purchased complete with new ¾ or 1-ton Chevrolet Truck in pickup or stake bodies; or mounted on your own truck; or mounted on a 4' x 7' trailer; or as a power takeoff unit. There is no extra charge for mounting when completed at our factory.

- Heavy duty 4-cylinder gasoline industrial engine with rating of 33 H.P., hand throttle to regulate speed. Equipped with electric self-starter.
- Heavy duty industrial exhauster, S. P. type. Electrically welded construction 10-gauge steel, built in our own plant specializing in fans, blowers and exhausters for over 25 years. All equipment statically and dynamically balanced.
- Extra heavy Double-Pillow-Block self-aligning Ball Bearings.
- Entire unit is of all-welded heavy steel construction, mounted on individual base and set at perfect balance on truck or trailer.
- Cleans the average heating unit in one hour or less. Furnace men make $100 per day in addition to developing resets, repairs and new furnace sales.
- Our Engineering Department is at your disposal for consultation and help.
- Built to the high standards of engineering set by the GENERAL BLOWER COMPANY and backed by more than 25 years of experience in design and construction, the new improved GENERAL Giant Furnace Cleaner is the most powerful furnace cleaning unit available. This unit creates the highest cleaning velocity through both hot and cold air ducts, as well as through chimney and combustion chamber.
- Advertising mats, literature, etc., are available to assist you in a profitable sales and cleaning program.
- The Type IN-1949 General Giant Furnace Cleaner represents another first in improved methods of furnace cleaning. GENERAL was first in producing the giant furnace cleaner. Now we offer an improved method of collecting the material from the heating plant.
- Abrasive ashes and soot do not pass thru the exhauster nor to the filter bag. Wear on the exhauster and damage to the bag are eliminated. The filter bag being free of heavy dirt is easily rolled up and placed on truck or trailer. Less maintenance and no expense for bag replacements.
- The Type IN General saves labor and the time of frequent trips to point of disposal.

Send For Literature Today!

GENERAL BLOWER COMPANY, 8610 Ferris Avenue, Morton Grove 4. Ill.

FOR NEW FURNACES
FOR FURNACE REPAIR
ONE POUND NET WEIGHT
THARCO
Asbestos
FURNACE CEMENT
MADE ONLY BY
THE ARMSTRONG COMPANY
DETROIT-MICHIGAN
"Tops" IN HEAT RESISTANCE AND ADHESION . . .
THARCO has successfully withstood temperatures up to 2500° at Detroit Edison and for long periods — that's nearly 50% higher than normal warm air furnace temperatures.
THARCO seals BOTH sides of the joint — gas-tight, smoke-tight — yet it's resilient enough to care for all normal expansion and contraction . . . and, Mister, it STAYS PUT permanently, thanks to the secret Armstrong formula!
THARCO Asbestos Furnace Cement comes in 1-lb. to 350-lb. metal containers — ready to use. See your jobber, or write us today for complete information.
THE ARMSTRONG COMPANY
4065 SO. LA SALLE STREET, CHICAGO
241 SO. POST AVENUE, DETROIT
319 SO. CROWDUS STREET, DALLAS

In 1947 he was made senior district representative in Knoxville, Tennessee, a position he held until his latest promotion.

J. T. Pitts will succeed him at Knoxville. Mr. Pitts has been district representative in Durham, North Carolina. R. T. Waits, who has been serving on the sales staff of the Charlotte branch office, has been promoted to district representative in Greenville, South Carolina.

C. D. ALLISON, general sales manager of the Dearborn Stove Co., Dallas and Chicago, has been named as assistant general manager of the company according to a recent announcement made by Roy M. Liedstrand, Dearborn president.

Mr. Allison has been associated with Dearborn for the past two years, entering the service of the company in capacity of director of sales and purchasing. He was later named as general sales manager, a position he has held until his recent promotion. Mr. Allison, in his new position, will act as assistant to R. H. Norris, vice president and general manager of the company, and will direct the functions of sales, advertising and sales promotion, credit, accounting, parts and service, regional operations and production.

C. D. Allison

E. V. Sullivan

THE APPOINTMENT OF EDWARD V. SULLIVAN as advertising and sales promotion manager of The Lau Blower Co., Dayton, Ohio, was recently announced by T. I. Byrd, sales manager.

Mr. Sullivan was formerly an account executive with the Hutzler Advertising Agency and prior to that was assistant to the advertising manager of The Sheffield Corp. He served four years in the AAF, seeing action in North Africa, Italy and the Mediterranean area.

His duties began January 1, 1949 and consist of the coordination of all Lau national advertising as well as contact and sales promotion activities with the Lau sales force and their distributors.

THATCHER FURNACE CO. of Garwood, New Jersey has just announced the completion of their new slide film entitled "Success Story."

In full color, "Success Story" present 22 minutes of interesting educational heating information. In brief the film embraces such topics as company history, policies, methods of production and distribution, together with complete discussion and illustration of the current Thatcher line of heating equipment.

At present, Thatcher is preparing a tentative schedule for showing the film at various distributors, jobbers, architects and trade association meetings throughout

You get — COMPLETENESS AND DEPENDABILITY WITH Profit

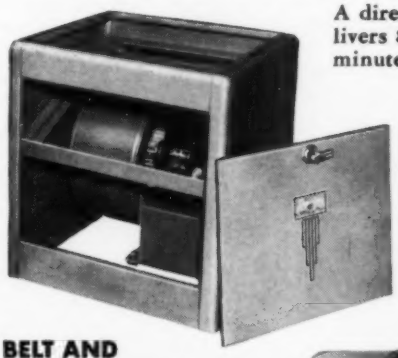
IN Peerless Electric

PACKAGE UNITS AND BLOWERS

● Peerless Electric blowers and package units are manufactured *complete* in the Peerless plant. Peerless is *not* an assembled line.

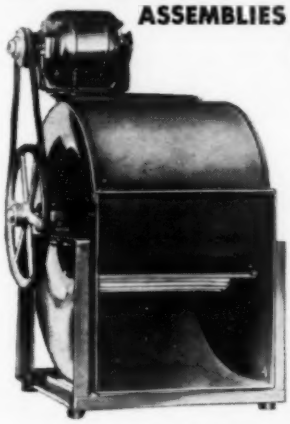
Peerless equipment is *dependable*—you minimize service worries because Peerless equipment is designed and engineered from 56 years experience in producing quality electrical apparatus. And you'll find that Peerless blowers and package units are priced right to earn a profit for you. Write for detailed information.

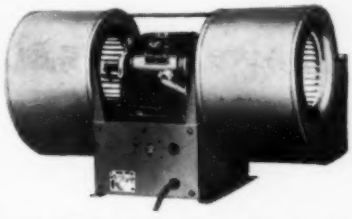
PEERLESS ELECTRIC AIRBOY BLOWER ASSEMBLY



A direct drive blower that delivers 850 cubic feet of air per minute. 3-speed blower with motor blower unit rubber cushioned. Blower wheel dynamically and statically balanced. The two motor bearings are the only bearings in the unit. Also supplied with cabinet and air filters as a complete package unit.

BELT AND DIRECT DRIVE BLOWER ASSEMBLIES





You'll find Peerless blower assemblies in many nationally-sold air conditioning furnaces of the finest quality. We furnish both of these assemblies ready to install in your own furnaces or cabinets. The many fine construction qualities of these blowers add valuable sales features to your heating units.

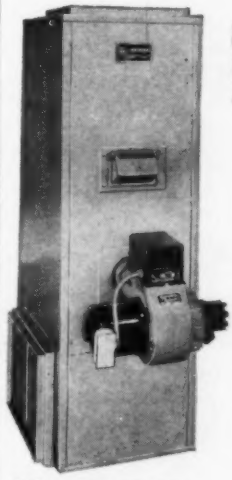
THE PEERLESS ELECTRIC COMPANY
ESTABLISHED 1893 • WARREN, OHIO

Peerless Electric
MOTORS • FANS • BLOWERS

a Warm Welcome to PROFIT AWAITS YOU!

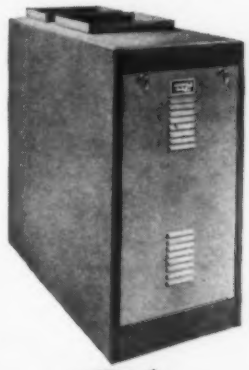
See General Automatic's Model 85 Oil Fired Warm Air Conditioning Units at the NATIONAL OIL HEATING EXPOSITION Boston May 16-20, Booth 487-89.

You'll find Model 85 a welcome profit maker . . . and mighty welcome to small home owners too! Model 85, Highboy and Lowboy styles, is designed for economical warm air comfort. Attractive unit. Easy to service. Fast selling budget packages. Fired by famous General Automatic burners, glass wool insulated. Highboy model is completely assembled at the factory ready for installation. It takes only 4 sq. ft. of floor space. Excellent for basementless homes. Lowboy designed for basement installation where space is not at a premium. Check first with General Automatic . . . for profit.



85 HIGHBOY ←

85 LOWBOY



← MODELS 100, 150, 200

Compact, attractive units, easy to install and service. Designed for economical warm air comfort in larger homes requiring 100,000 to 200,000 B.T.U. A complete line of warm air units for every size installation.

GENERAL Automatic

GENERAL OIL BURNER CORP., Baltimore 13, Md.

YOU GET *both!*

AUTOMATIC **GAS** HEAT...

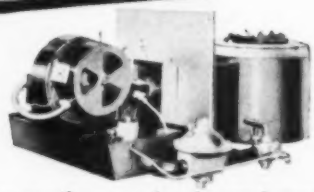
AND

AUTOMATIC **OIL** HEAT...

with **one** burner and **one** furnace...

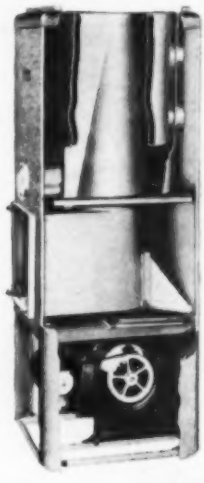
by installing the new, sensational

Com-Fort 2-FUEL GAS-OIL BURNER-FURNACE UNIT



This amazing Com-Fort 2-Fuel Burner is your money-making sales answer to almost every automatic home heating problem! It burns *either gas or oil* . . . can be changed over instantly from one fuel to the other at the turn of a switch . . . or can be installed with a control that regulates the fuel choice *automatically* in accordance with variations in outdoor temperature. What a sweetheart of a selling story you have here! Now your customers can enjoy *either* gas or oil with the *same* burner . . . can switch fuels in accordance with availability, cost, seasonal loads, etc. Unit, as shown, is designed especially for quick, easy, 4-bolt installation in Com-Fort's R2 Forced Air Furnace (below). Get set now! Be *first* to feature this revolutionary new idea in 2-fuel automatic home heating.

FOR QUICK, EASY INSTALLATION IN



Com-Fort

GAS-OIL FORCED AIR FURNACE

This compact forced air furnace — just 66" high x 25" wide x 25" deep — is specially designed to give high heating efficiency when fired with *either gas or oil* using the Com-Fort 2-Fuel Burner shown above. The unit is beautifully finished in blue Hammerloid baked enamel . . . is ideal for basement or utility room installation . . . comes completely set up (burner boxed separately) for quick, easy installation. *This furnace may also be installed with a Com-Fort pressure oil burner, vaporizing burner, or gas burner.*

Comfort Equipment Corporation

MAIL TODAY

914 S. MICHIGAN AVE., CHICAGO 5, ILL. WE 9-5353

PLEASE SEND ME ADDITIONAL INFORMATION ON THE COM-FORT 2-FUEL GAS-OIL BURNER-FURNACE UNIT

Name.....

Address.....

I AM A — HEATING CONTRACTOR ☐

— HEATING EQUIPMENT JOBBER ☐

the country and, accordingly, will welcome any inquiries concerning additional information about the film.

By using this modern method of sales presentation, Thatcher feels it will be able to accomplish the dual functions of furnishing the trade with an effective selling and educational tool and, at the same time, serve to develop still further, the close feeling of cooperation with the trade that Thatcher has consistently maintained throughout its long history.

APPOINTMENT OF ROBERT H. JACOBS as superintendent of schoolhouse control sales for the Minneapolis-Honeywell Regulator Co. has been announced by John E. Haines, vice president of the company's commercial division.

The appointment establishes a new position in the company. Mr. Jacobs will work directly with Honeywell salesmen throughout the country specializing on the promotion and sale of automatic heating, ventilating and air conditioning control systems for school buildings. The company manufactures a special line of controls for schools.

Mr. Jacobs is a graduate of Marquette University and joined Honeywell in 1940. After training, he was assigned to the commercial division's sales department of the Milwaukee branch office. In his new position, Jacobs will continue to make his headquarters in the Milwaukee office.

R. H. Jacobs

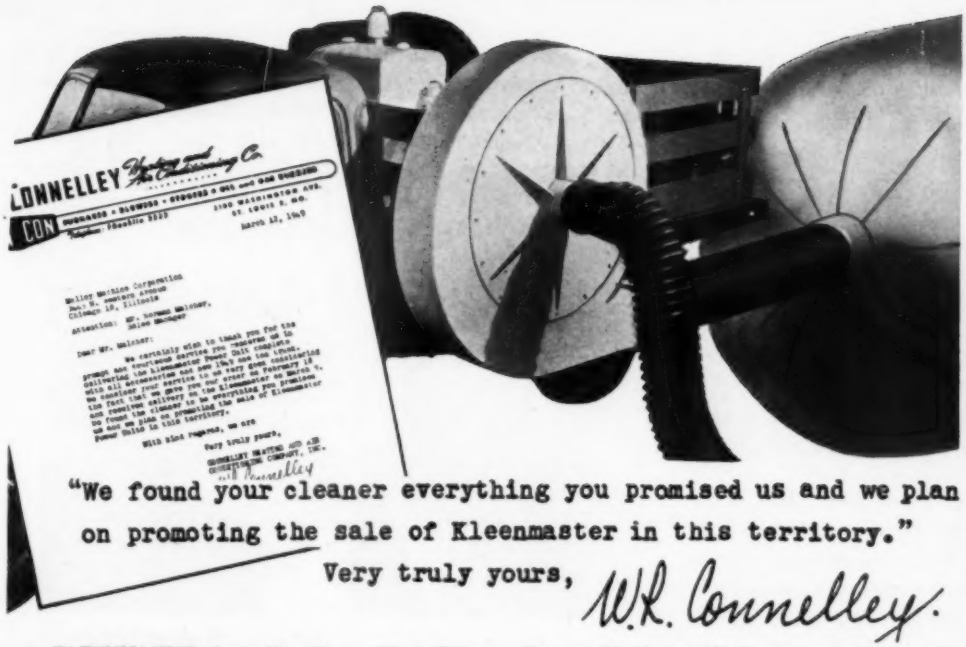
W. H. Magee

W. H. MAGEE has been appointed general sales manager of Russell Electric Co., Chicago, subsidiary of Raytheon Manufacturing Co., it was announced recently by Earle C. Ballentine, executive vice-president of Russell.

During the past four years, Mr. Magee was midwest sales manager of U. S. Gauge Co. Division of American Machine and Metals, Inc., with offices in Chicago. Previously, he served as Chief of Pressure Instruments on the War Production Board in Washington from 1942 to 1944.

THE BLACK & DECKER MFG. CO., Towson, Maryland, announces several shifts in their field personnel. James F. Moore who has been service engineer at the Chicago branch has now joined the Chicago sales department as sales engineer. T. J. Waters has been appointed service engineer for Chicago.

W. E. Boyles, service engineer at the New Orleans branch, has been transferred to the Cleveland branch as sales engineer and R. B. McClellan has been ap-



"We found your cleaner everything you promised us and we plan on promoting the sale of Kleenmaster in this territory."

Very truly yours, W. R. Connelley.

The Product of Over 15 Years Experience in the Design and Construction of Air Moving Equipment

KLEENMASTER

KLEENMASTER PROFIT-PACKAGE INCLUDES:

- 1949 Ford or Chevrolet truck at list, no extras
- Power unit assembly: LeRoi engine with electric starter and hand throttle, welded steel exhauster
- Two-season sateen filter bag, 32' by 6' diameter
- 100' flexible reinforced rubber hose and steel tubing, 20 new type couplings

ONLY KLEENMASTER OFFERS ALL THESE ADVANTAGES

- Twin-disc clutch prevents overload of engine during starting.
- Heavier gauge 3/16" welded steel construction gives more years of service.
- World's largest furnace cleaner, naturally does better, faster cleaning.
- Patented rubber slip-on tube couplings.
- Free training for beginners.
- 3-color literature for selling the home-owner.
- Full guarantee for one year.
- Time payment plan.

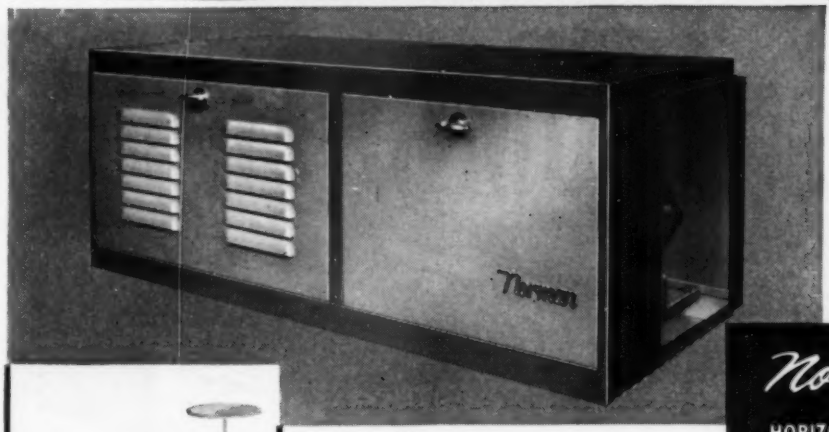
Also available in trailer mounted junior model, or without truck or trailer.

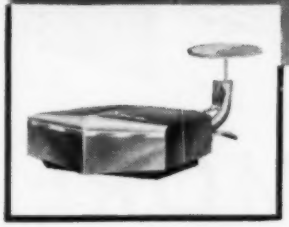
1. KLEENMASTER Saves Man Hours, Time, Expense. Because it's the world's largest vacuum cleaner, with higher velocity suction, Kleenmaster cleans better, faster. Cleans heating plant in less than 1 hour, smaller cleaners take 2 or 3 hours. You make at least $15 on each job, do an average of 8 thorough cleaning jobs per day.
2. KLEENMASTER Opens Door To Equipment, Repair Sales. Because you clean so many more heating plants with Kleenmaster you're in contact with far more home and building owners, get more orders for repairs, new equipment, and complete heating systems. Steps up profits.

Home Owners Prefer KLEENMASTER. Because Kleenmaster's powerful suction penetrates where smaller cleaners can't, does the job so much more thoroughly, and faster. Also, with Kleenmaster there's no messy tracking of portable cleaners from room to room, Kleenmaster draws all the dirt outside, into its enormous bag.

SEND TODAY!
Get details and FREE literature!

molloy sales corp. 3445 N. WESTERN AVENUE • CHICAGO 18, ILLINOIS
3617 HAVERFORD AVENUE • PHILADELPHIA 4, PENN.





Models Illustrated: Above, Southerner FUB-100;

Left, Gas Conversion Burner. For low cost conversion to automatic heat, get the facts on Norman Gas and Norman Gas-Oil Conversion Burners.

THE ONE GAS FURNACE WITH 101 APPLICATIONS

Norman Southerner

HORIZONTALLY DESIGNED FORCED AIR GAS FURNACE

Here's the revolutionary heating system with 101 applications. Compact, horizontal design helps solve heating and sales problems through low cost—small space—installations. Outstanding performance has been proven in thousands of installations.

The Southerner fits in attic, closet, under floor, ceiling or stairs, on service porches or any small space. Brings new heating convenience to all types of homes and commercial buildings. Ideal for replacement because it fits in any small space without major alteration.

Operates on natural, mixed, manufactured or LP gas. Meets all AGA safety requirements for attic, under floor, closet or service porch installation. Approved by FHA. Available: 30,000, 60,000, 80,000 and 100,000 BTU Furnace and Unit Heater models. Large size dimensions only 21¼" high by 23" wide by 52" long.

DEALER AND DISTRIBUTOR TERRITORIES AVAILABLE

Norman Products Co.,
Dept. 22
1148 Chesapeake Ave.,
Columbus 12, Ohio

Please send complete details and information on the Norman Southerner and its 101 applications to the new construction and replacement heating market.

NAME .....

COMPANY .....

ADDRESS .....

pointed service engineer in New Orleans to fill the vacancy created by Mr. Boyles' promotion.

Also it is announced that Thomas Rogers has been promoted to sales engineer at the Dallas branch.

Other recent announcements by the company have involved various service stations. The Chicago sales and service station has been moved to a new building at 1100 W. Jackson Blvd. designed and built to suit the requirements of Black & Decker.

A new service station has been opened in Cincinnati at 1094 Gilbert Ave. and the Denver station has been relocated in a building especially built at 1010 Bannock St. There are 25 of these stations in the United States handling the service and repair of Black & Decker tools.

FORMATION OF AFFILIATED GAS EQUIPMENT, INC., with headquarters in Cleveland has been announced by Lyle C. Harvey, president and general manager of the new corporation. The new organization represents the combining in a single unit of three well known manufacturing companies with a full line of products in every phase of the heating, water heating and year 'round air conditioning fields.

This unique organization brings together, under single management, three pioneering firms in the gas heating and allied fields, all of which were previously subsidiaries of Dresser Industries, Inc. These are the Bryant Heater Co. of Cleveland, the Day & Night Manufacturing Co. of Monrovia, California, and the Payne Furnace Co. of Beverly Hills, California. Five major producing plants are merged in this single organization and will manufacture the most complete line of gas-fired equipment for both heating and water heating in the residential, commercial and industrial markets. Two of the Bryant Heater Division plants are located in Cleveland, with a third in Tyler, Texas. The Day & Night Division property is in Monrovia, California, while the Payne Furnace Division plant is in Beverly Hills, California.

L. C. Harvey

E. H. Davison

E. H. DAVISON has been appointed general sales manager of the Williams Oil-O-Matic division of Eureka Williams corporation, it was announced recently by H. W. Burritt, president.

Mr. Davison, who has been associated with Oil-O-Matic for many years, was formerly manager of heating sales. In his new capacity Mr. Davison assumes the dealer-distributor sales supervisory duties of W. A. Matheson, whose resignation as executive vice president of the corporation became effective February 18th.

Convector HUMIDIFIERS

Also Built for Sloping Plenums— Adjustable to 30°

MORE Humidity per $ Cost

Sell MAID-O'-MIST Convector Humidifiers for greater humidity per dollar cost. Exclusive "Flash Action"—vaporizes water 9 times faster. 30% more evaporative area. 60% less restriction to air flow. Completely assembled—50% less time to install. Standard equipment on America's finest furnaces. Attractively priced. Check with your jobber, or write us.

MAID-O'-MIST INC.
3213 N. PULASKI RD.
CHICAGO 41, ILLINOIS

AUTOMATIC HUMIDIFIERS FOR ALL TYPES OF HEATING SYSTEMS

Peerless Oil Master

is your answer for

Automatic Heating

Compact • Economical • Customer Satisfaction • Ruggedly built of steel • Latest engineering features • Backed by a quality reputation for home heating for nearly 50 years • Immediate delivery.

Only a few of the many features which make it the ideal furnace for the thousands of small homes now being built. Here's your opportunity to give your customers more comfort with more profit for you. Write today for full details on the tremendous profit potential that is yours when you sell the complete line of Peerless Furnaces, and Repair Parts.

PEERLESS FOUNDRY COMPANY
INDIANAPOLIS 7, INDIANA
Pioneers in warm air heating for almost half a century

Above: Peerless *Oil Master* with side panels removed to show radiator, filters, blower, combustion drum and final heating chamber. Separate vestibule for oil burner.

At Right: Peerless *Oil Master* with panels in place. Note compactness. Baked enamel finish. Easy to keep clean.

NATIONAL OIL HEAT EXPOSITION

MECHANICS' HALL • BOSTON • MAY 16 THRU 20, 1949

IN CONJUNCTION WITH 26TH ANNUAL CONVENTION OF OIL-HEAT INSTITUTE OF AMERICA

OHI — OIL-HEAT INSTITUTE OF AMERICA

A BLUE RIBBON EVENT IN NEW ENGLAND

Leaders of the Oil Heating Industry who recognize **A NEED** and **AN OPPORTUNITY** are Exhibiting and Participating.

THE NEED: Today—this year—the Oil Heating Business is on the rebound. But it's a buyer's market. It's going to take old-fashioned salesmanship with modern push, and that means **hustle** and **salesmen, advertising** and **visual promotion** . . . Someone's going to get the business—the growing business. That someone is the Manufacturer, his Distributor, his Dealers who recognize THE NEED FOR 1949 METHODS TO MEET 1949 CONDITIONS.

THE OPPORTUNITY: To further your planning . . . to bring **your** Positive Sales Program into step with the leaders . . . to show your products, as a Manufacturer . . . to view, and know about, the latest equipment, as a Distributor, Dealer . . . to make invaluable contacts . . . to benefit by hearing authoritative speakers in frank discussions of the Industry's problems . . . to get the feel of a Prime Market—New England—and of the Entire National Oil Heating Picture . . . THE OPPORTUNITY OCCURS IN BOSTON AT THE 5-DAY NATIONAL OIL HEAT EXPOSITION AND OHI CONVENTION — THE OIL HEATING EVENT OF THE YEAR! **SEE YOU THERE!**

For information on Exposition Space Address Oil-Heat Institute of America, Inc., 6 East 39th St., New York 16—Murray Hill 5-1638.

Make your Hotel Reservations NOW by writing Boston Chamber of Commerce, Housing Bureau, 80 Federal Street, Boston 10.

"OIL HEAT—PROVED AND APPROVED BY MILLIONS"

HALL-NEAL FURNACE CO., Indianapolis, Indiana, held its annual dealer sales conference at the Marott Hotel in that city on March 3rd and 4th. Fred Gombert, sales manager of the company made all the arrangements for taking care of the more than 200 dealers who attended and made an important contribution to the program as he defined the Hall-Neal sales aims for the coming year.

Hall-Neal dealer group.

Fred S. Boone, president of Hall-Neal welcomed the dealers to the city when the conference opened on Thursday morning, March 3. The program that had been set up was mainly occupied with merchandising, locating the sales prospect and getting his name on the dotted line. Speakers who took up various phases of this problem included Arthur Jutry, Jutry and Associates; Lou Young, advertising director, *Indianapolis Times;* A. V. Grindle, Grindle Advertising Agency and W. T. Winters, president, Consolidated Industries. Edwin A. Scott, president, E. A. Scott Publishing Co., spoke on increasing sales through better business methods.

Fred S. Boone

Fred Gombert

The company has just completed a new plant, located behind the existing plant, which will double furnace production in 1949 and the dealers were taken through both plants on the second day of the meeting.

W. A. MATHESON resigned his position as executive vice president of the Eureka Williams Corp. at a board meeting of the corporation held Friday, February 18, in New York City. The resignation was accepted. Mr. Matheson will continue as a director of the corporation.

Certified Counterflow Oil Burning Winter Air Conditioner. May be sold with or without burner and controls for completely automatic operation.

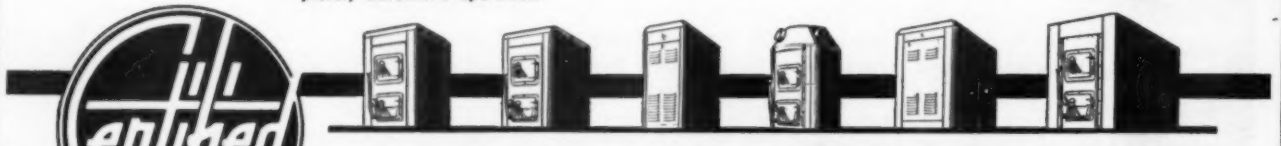
Certified

"ZERO PROVED" reliability SELLS your customers

They will welcome a heating unit able to beat Northwest winters. The Certified Counterflow is easy to sell, easy to install, easy to convert for any fuel. Our gas conversion and oil burners fit all Certified Furnaces.

Certified Counterflow size range includes the right unit for every home. Eight units for coal, oil and gas firing available in bonnet outputs of 90,000 to 325,000 B.T.U.

MEMBER NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION INDOOR COMFORT



Certified HEATING EQUIPMENT

CERTIFIED FURNACE CO.

DIVISION OF STAINLESS & STEEL PRODUCTS COMPANY

1000 BERRY AVE. ST. PAUL 4, MINN.

HERE'S WHY...

You'll be money ahead purchasing

HARDWARE

"all from ▮ source"

simplified purchasing • complete selection
lower shipping costs. • simplified control
uniform high quality • prompt delivery

Ask about our complete line of...

HANDLES
CATCHES
HINGES
SCREWS and BOLTS

suitable for use on...

- SPACE HEATING UNITS
- AIR CONDITIONING EQUIPMENT
- OIL BURNERS
- STOKERS
- GAS HEATING UNITS
- HUMIDIFIERS

WRITE US FOR FULL INFORMATION

NATIONAL LOCK COMPANY

ROCKFORD • ILLINOIS

The new CHASE THRU-WALL COPPER FLASHING

A 3-WAY BOND economically priced!

NOW you can get flashing that bonds the masonry both laterally and vertically in every direction—and is promptly available at a moderate price!

Chase Thru-Wall Copper Flashing incorporates a unique saw-tooth design that produces a 3-way bond—and provides channels for rapid drainage of any moisture penetrating the wall.

Chase Thru-Wall Copper Flashing comes in 6-foot lengths, with interlocking overlap that ends the need for soldering—is easily formed by the sheet metal contractor.

Available through 23 Chase warehouses—and through leading distributors.

Chase

the Nation's Headquarters for

BRASS & COPPER

WATERBURY 20, CONNECTICUT
SUBSIDIARY OF KENNECOTT COPPER CORPORATION

WAREHOUSES:
Atlanta, Baltimore, Boston, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Indianapolis, Kansas City, Mo., Los Angeles, Milwaukee, Minneapolis, Newark, New Orleans, New York, Philadelphia, Pittsburgh, Providence, St. Louis, San Francisco, Seattle, Waterbury
SALES OFFICES:
Albany, Houston, Rochester

Mail coupon for free information on features and uses.

Chase Brass & Copper Co.
Dept. AA49, Waterbury 20, Conn.

Gentlemen:

Please send me free descriptive literature on Chase Thru-Wall Copper Flashing.

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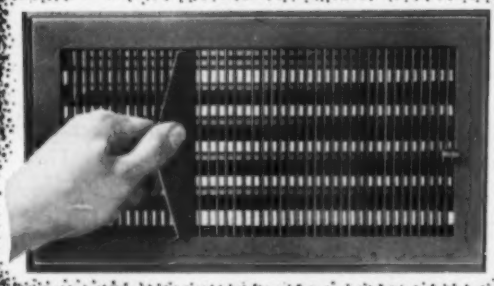
ADDRESS_____

CITY_____ STATE_____

NOW YOU CAN

Get Back To Quality Registers

U. S. No. 40 SERIES
GRAVITY BASEBOARD REGISTERS



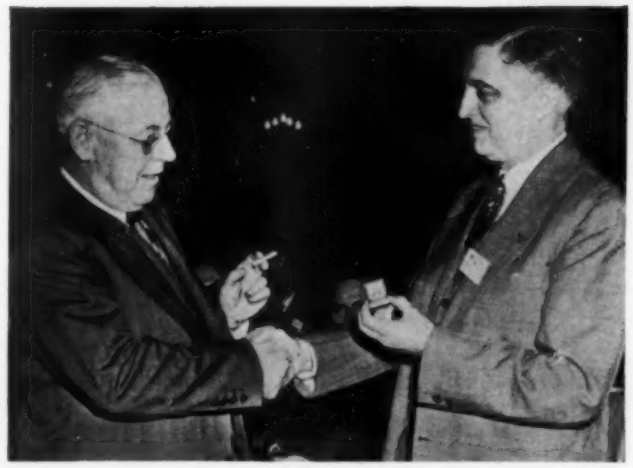
U. S. No. 256
4-WAY FLOW A-C REGISTERS

This *Quality* Pair Cannot Be Equalled

Quality has always been maintained—and *now* prompt service is once again the order of the day on U. S. Register Products. For gravity and forced-air conversion systems U. S. No. 40 has never been excelled. For Air-Conditioning and blower systems U. S. No. 256 has *no equal* for *versatility, beauty,* and low-cost installation. Place your requirements now—also for pipe and fittings for gravity and Air-Conditioning.

U. S. REGISTERS NOW PROMPTLY AVAILABLE IN ALL CLASSES

UNITED STATES REGISTER CO.
BATTLE CREEK, MICHIGAN
MINNEAPOLIS • KANSAS CITY • ALBANY



C. N. O'Day, left, president of Air Devices, Inc., receives diamond ring from J. W. McGuire, New York sales representative for the company.

CORTLAND N. O'DAY, president of Air Devices, Inc., 17 East 42nd Street, New York 17, N. Y., manufacturer of Agitair air diffusers, air filters, and roof exhausters, was presented with a diamond ring and testimonial scroll by the Air Devices sales representatives and staff at the annual sales meeting in Chicago. The record attendance heard plans for new and improved products now in production.

WILLIAM L. MCGRATH, president of the Williamson Heater Co., Cincinnati, Ohio, has been elected the 68th president of the Cincinnati Chamber of Commerce. Mr. McGrath, a well-known figure in the heating industry, joined Williamson Heater in 1920 as a salesman and 24 years later took office as president of the company.

Mr. McGrath testified before the Senate committee studying the basing point pricing question a short while ago and forcefully presented the case of the warm air furnace manufacturer.

FASCO INDUSTRIES, INC. is the new name for F. A. Smith Manufacturing Co., Inc., long-established manufacturer of fans, motors, ventilators, blowers and automotive electrical equipment of Rochester, New York. The new name conforms more closely to the trademark "Fasco" used on the company's products.

H. P. Toppin, president, states that there is no change in corporate structure, officers, directors or policies.

J. HARVEY SEAT AND ASSOCIATES of Atlanta, Georgia have been appointed distributors of the Panelox stainless steel combustion chamber manufactured by the Stefco Steel Co., Michigan City, Indiana.

The Seat organization is well known and is handling the sales of Panelox in the states of Georgia, South Carolina, northern Florida, and northern Alabama.

STELWAGON MANUFACTURING CO., Philadelphia, Pennsylvania has opened a new branch sales office and warehouse in Wilmington, Delaware. Located at 200 Maryland Avenue, the branch is managed by W. G. Saulsbury.

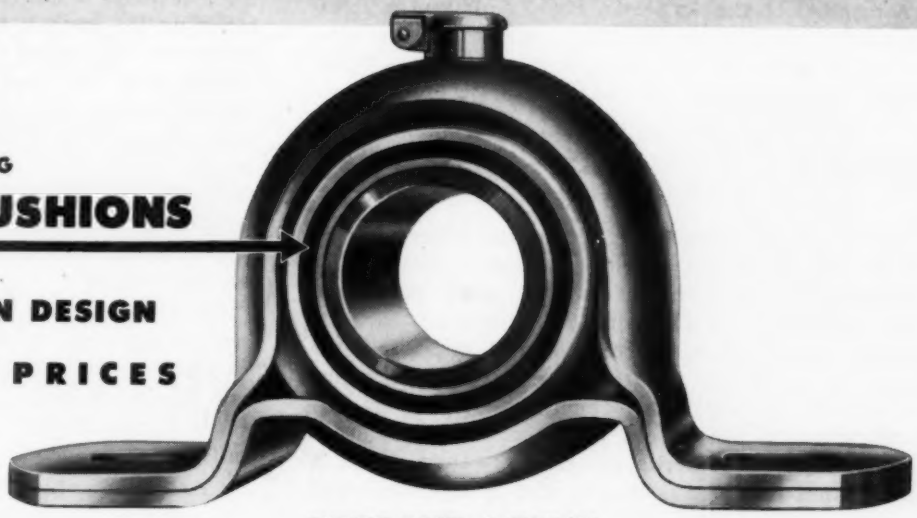
ROBERT C. CHAMPLIN has been appointed general manager of the J. L. Gillen Co., Dowagiac, Michigan, manufacturers of automatic gas and oil heating

TRIANGLE PILLOW BLOCK

SHOCK —ABSORBING
BUILT-IN CUSHIONS

- TIME-PROVEN DESIGN
- NEW LOW PRICES

Special mountings designed to meet individual conditions



WRITE DEPT. A TODAY

TRIANGLE MANUFACTURING COMPANY
388-400 DIVISION STREET OSHKOSH, WISCONSIN

Equip with
THERMO DRIP

FOOL PROOF AUTOMATIC HUMIDIFIER THAT LASTS LONGER

Thermo-Drip Humidifiers are made to give you years of trouble-free performance. Even with hardest water, Thermo-Drip stands the test with long life and few replacements.

Thermo-Drip pans are stainless steel, rust-resistant, corrosion-proof. This thin bare metal pan with only a thin film of water gives greater humidifying efficiency by heating and vaporizing the water much faster.

Thermo-Drip Humidifiers are the *adjustable* humidifier. An outside fingertip control gives every user precisely the amount of humidity desired.

These extra features are built into every Thermo-Drip Humidifier

- Drip Feed Principle creates balanced atmosphere
- Hot pan surface gives immediate vaporization.
- No stagnant pool of water stands in pan
- Fingertip adjustment for more or less humidity
- Easy to clean
- No electrolytic action
- Valve movements prevent clogging by lime
- Easy to install — fits all types of warm air furnaces

Write today for Free Catalog, Dept. A-59

AUTOMATIC HUMIDIFIER CO.
CEDAR FALLS, IOWA

equipment. Mr. Champlin was formerly with the Richmond Radiator Co. as their Michigan, Ohio, and Indiana district manager, and prior to that was chief heating engineer with the Timken Silent Automatic Co. for 12 years.

A member of the American Society of Heating and Ventilating Engineers, Mr. Champlin has been a lecturer and instructor at many of the Michigan State College and University of Toronto short courses.

Kruckman—

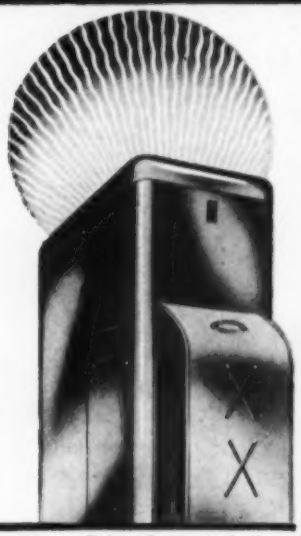
(From page 69)

their tempo and spirit better than any other man in public life. He said they were obsessed by fear and by futility, and the resultant lack of spirit prevented them from properly financing the movements in their behalf. It has appeared to be almost impossible for them, until recently, to grasp the fact that they are collectively—30 million of them—the most powerful single group in the nation. If and when they coalesce —which appears to be happening now—they will hold the balance of power politically and in any other way they wish to use the power. The labor unions at their best have never been able to muster more than 12 million; the farmers do not number more than 18 million. And in all the reaches of Federal Government, the permanent organized groups who come under Civil Service, there are not more than 2.5 million persons. It is estimated the people employed in local and state governments number somewhere between 6 million and 8 million persons. There is a loose identity of ideas and purposes between the aristocrats of Federal employment, and the less aristocratic employees of local and state governments. Broadly speaking, you have, therefore, between 8 million and 10 million persons who make up the human mechanism that makes government tick. Big business apparently is more a thing of shadow and fear than a reality. Most of its interests run concurrent and parallel with those of independent smaller business. When the two finally quit shadow boxing and get together they will undoubtedly find that they belong to the same lodge. Meanwhile, it is interesting to learn how they are both nicely handled by the politicians. Said a Senator to this reporter not so very long ago:

"You wonder why independent small business does not get more out of Congress. You wonder particularly because we talk so much about our love for independent smaller business. You see often how our hearts bleed in public over its many problems. Yet nothing much ever happens.

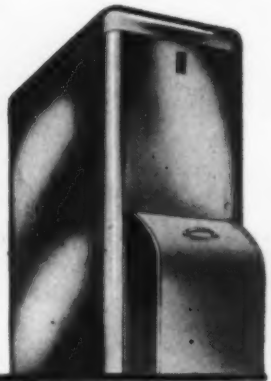
"You know why? We have a necessary technique. We can only stay in our jobs so long as we can muster votes and so long as we can muster the funds to help us to get the votes. All right; what happens? We talk small independent business with every breath we take, and we legislate for big business, big labor, big agriculture, and everything else that is big that can give us money. We know the bigs are organized and we

WHEN YOU THINK OF HEATING EQUIPMENT—



Remember

XX CENTURY ZEPH-AIR



With It's 54 Years of Engineered Efficiency in The Heating Field

OIL Quiet, Economical, Space Saving, Zeph-Air Oil Burning Furnaces, Easy To Operate, Easily Installed.

GAS Completely Automatic Air Conditioned Gas Furnaces With The Famous Gear Shaped Cast Iron Radiation Surfaces.

COAL You Buy Quality In Zeph-Air Coal Furnaces. No Costly Service Calls To Worry About.

It Pays To Push Zeph-Air Heating Products — Thousands of Satisfied Users All Over The Country Remember The Dependability And Reliability Their Zeph-Air Furnaces Stand For.

When a Zeph-Air Furnace Has Ended Its Long-Life and Is Ready To Be Replaced — The Customer is Almost Sure To Say — "Years of Uninterrupted Service," "Install Another Zeph-Air."

Cash In On This 54 Years of Customer Satisfaction — Stock Up On Zeph-Air Heating and Weather Conditioning Equipment — Now.

THE XXTH CENTURY HEATING & VENTILATING CO.

96 IRA AVENUE AKRON, OHIO

NOW AVAILABLE

A complete reprint, under one cover, of Professor S. Konzo's invaluable series of articles —

The

"HOW, WHAT AND WHY"

of the New

Winter Air Conditioning Manual

Everyone who is now using or expects to use the new "Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems" will find Professor Konzo's series a source of much practical help in understanding the Code and correctly applying it to actual jobs. In this great series, Professor Konzo not only explains step by step exactly how to use the Code, but, in addition, tells in detail of the research and experience that is behind each step in the suggested procedures.

Price — Only $1.00 per copy

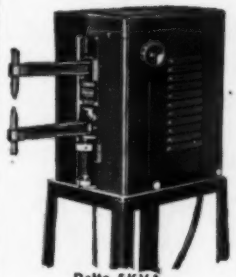
AMERICAN ARTISAN

6 NORTH MICHIGAN AVE. CHICAGO 2, ILLINOIS

Free Delta Bulletin Ad-453..

Gives you the year's biggest money-saving news in welding!

DELTA MILWAUKEE ®



Delta 5KVA Spot Welder
$228.00*
as shown, with helmet

Delta 120-Ampere Portable Arc Welder
$141.75*
as shown, with helmet

Tells you about a new welder that spot welds, arc welds, brazes, and solders! It's the Delta "Dual-Weld" Combination Welder. There's no other welder like it! It combines a 5KVA spot welder and 120-ampere arc welder—and costs less than separate units.

Tells you about the new Delta 5KVA Spot Welder that spot welds fine wire as efficiently as 16-gauge steel, without burning or overheating — on a production basis.

Tells you about the new Delta 120-Ampere Portable Arc Welder —a light-duty, limited-input, transformer-type welder.

Keep posted on the newest developments in welding. Send for Bulletin AD-453 now!

DELTA MANUFACTURING DIVISION
ROCKWELL MANUFACTURING COMPANY
MILWAUKEE 1, WISCONSIN

DELTA MANUFACTURING DIVISION
790D E. Vienna Ave., Milwaukee 1, Wis.

Please send me Bulletin AD-453 describing the new Delta Welders that are available on easy time payments.

Name_____
Title_____
Company_____
Address_____
City_____ (_____) State_____

DW-28

Tear out coupon and mail today!

*Prices subject to change without notice.

$500 prize contest

for New Applications of *MicroRold*® Stainless Steel in gauges .015 and thinner

1ST PRIZE	$250
2ND PRIZE	100
10 PRIZES	15
TOTAL	$500

Washington Steel Corporation announces a contest with $500.00 in prizes for suggestions for new uses or applications of MicroRold stainless steel sheet and strip in gauges of .015 or thinner. Entries will be judged on the basis of economic practicability and originality by a board of three impartial judges selected by the corporation; the decisions of the board will be final. There is no limit on the number of suggestions that each entrant may submit.

By submitting an entry each contestant grants to Washington Steel Corporation the non-exclusive right to promote the manufacture and sale of any article or idea contained in the entry. All entries must be submitted on your company letterhead.

The contest closes at midnight, June 30, 1949, and all entries must be postmarked on or before that time. Winners will be notified by mail on or before July 31, 1949. Duplicate prizes will be awarded in case of ties.

Employees of Washington Steel Corporation and its advertising agency and members of their families are ineligible. The contest is subject to all applicable federal, state and local laws.

Mail entries to:
Contest Headquarters,
Washington Steel Corporation,
Washington, Pennsylvania.

WASHINGTON STEEL CORPORATION
118 Woodland Avenue Washington, Pennsylvania

know we must do at least some of their bidding to get what we need to stay in office. We also know that independent smaller business, despite its huge potentialities in votes and influence and organized power, is utterly unorganized. It does not have the leadership, nor the unifying agency which holds its 10,000 local, state and national organizations together for a common objective. So, it does not have the great power to enforce its collective will as have the others. Moreover, we know the others not only have money, but they have the organization to bring out the actual vote. Do you know what often happens with the smaller businessmen? There is no one to tell them how important it is for them to vote. There is no one to force them to make their votes count. So they regard election day as a holiday, and, instead of going to the trouble of voting they go out to the country club and play golf and curse us and the Government. Do you see?

"Now, once they really get together and use their power collectively, intelligently, and with direction, nothing can beat them. They can command any legitimate thing they want. I often think it is a pity they have missed the boat."

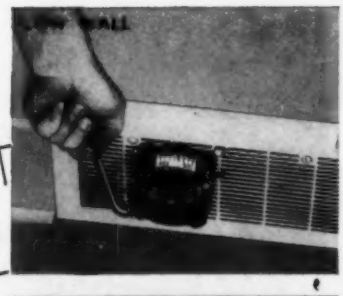
Many Organizations Started

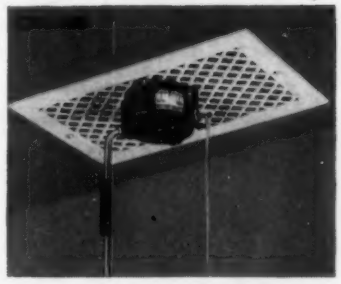
Some 50 organizations have been started at various times with name of smaller business or independent business somewhere in their titles. Many have been sincere but utterly futile. Most of them have been rackets which survived just long enough to enable some smart boy to collect a few dollars. Some of them have reached large proportions. There are several which are definitely known to be under the domination of men who have sold out their leadership to those who do not wish to see smaller independent business become a powerful element in the nation's affairs. One such so-called leader, who heads an organization having thousands of paying members, has a private business which produces something which can be purchased in large volume by those who are in opposition. It is known to Government officials that this man sold large quantities of his products to the opposition for prices fantastically out of balance with his normal prices. And it is known that his leadership of his smaller business organization has been carefully denuded of anything that might make it a real power. Another organization recently had a large gathering of its members in Washington. The members visited Congressmen, called upon Government officials, and went through a number of futile motions. A correspondent asked one of the staff of the organization, which spends upwards of $500,000 a year collected from the members, what did the members get out of their excursion to the Capital. "A joyride, the privilege of meeting some of those whose names they see in print or hear on the radio, and a good time," cynically replied the smaller business organization official.

Recently a movement was started in Chicago, at a hush-hush conference in the Blackstone Hotel, which should offer hope of something more substantial and sincere. The conference was held on Washington's birthday, which may be indicative of something hopeful. Ten men from different parts of the country, representing some 18 or 20 different industrial groups, were called together to hear a program and a plan

FLORITE Direct-Reading AIR VELOCITY METER

RANGE—0-1000 FT./MIN.
20 FT./MIN. SCALE DIVISIONS





8" SCALE—Widest Scale of Any Mechanical Air Velocity Meter Ever Designed!

The FloRite is an unsurpassed sales and service aid in heating, ventilating and air conditioning work. On installation and service work it is used to determine velocity and direction of air flow from registers and grilles for the purpose of checking rate of air delivery, balancing the system and adjusting deflecting vanes and louvers of registers so as to obtain "draft free" air distribution. These tests cut installation and service time, prevent expensive call-backs, and promote customer goodwill. The FloRite is equally helpful for selling new equipment or modernization. It can be used in many ways to convincingly demonstrate discomforts and inefficiencies of a worn-out or inadequate system.

The FloRite is entirely self-contained. It has no hose or probe, and gives all readings required for heating, ventilating and air conditioning work. The detachable handle facilitates use of the FloRite at low wall or high side wall registers. By screwing a ⅛" pipe into the handle the FloRite can be conveniently held against ceiling grille.

The FloRite is equipped with a unique scale lock which makes it possible to retain the reading until the lock is released. For ceiling grille readings, this lock is easily manipulated by means of a piece of string. This feature makes the FloRite exceptionally adaptable for indicating air velocity in hard-to-reach or dimly lit locations.

Dealer's Net Price *with leather carrying case* **$24.00**

Ask your jobber for the FloRite or write for Leaflet 760.

BACHARACH INDUSTRIAL INSTRUMENT CO. — 7000 Bennett Street · Pittsburgh 8, Pa.

You'll Sell Your Customers More When You *Sell Them Clipper*

Here is a typical Clipper air-conditioning furnace with front panels removed to show easy accessibility of controls, blower and burner equipment.

Not only do Clipper automatic gas-fired furnaces with the Multi-Stream Heat Exchanger offer efficient economical heating, but also modern air conditioning for the greatest living comfort.

COMPLETE RANGE OF SIZES. Clipper furnaces are built in a range of sizes from 80,000 to 200,000 BTU.

COMPETITIVE PRICES. Despite their fine engineering, heavy gauge metals, highly improved controls and other features, Clipper gas-fired furnaces are priced in competition with ordinary furnaces.

IMMEDIATE SHIPMENT. Due to the size of the Henderson plant, equipped with the most modern machinery and to the fact that the plant is located in one of California's most productive climates where steady home-owning mechanics are available, we are able to give you immediate shipment of any model.

Compact, with baked enamel finish, the Clipper is attractive for installation anywhere. Clipper units are easily installed even in a small closet. *All Clipper furnaces, regardless of size, are shipped to you completely assembled, completely wired and individually tested at the factory.*

HENDERSON FURNACE AND MFG. CO.
SEBASTOPOL, CALIFORNIA

You'll Find the Clipper Enables You to Sell More—For complete information on Clipper gas-fired units and also on the details of a profitable sales representation plan, fill out and mail this coupon.

Henderson Furnace and Manufacturing Co.
Sebastopol, California

I am interested in the sales opportunities of Clipper furnaces. Please send me complete information.

Name_____

Address_____

City_____ State_____

It Is Commonly Agreed That 1949 Will See Almost As Many Moderately-Priced Homes Built As In '47 and '48.

Don't let the orders for warm air heating installations catch you unprepared. Be ready to jump in and get the profits that 1949 will provide for those who are alert.

HANDY PIPE

is now more available. We've been able to get more sheets . . . . we've processed them faster . . . . we've caught up with many orders and you don't have so long to wait. . . .

And, best of all, you KNOW that the quality of the materials, the standard of workmanship and the correctness of design are all that the history of HANDY PIPE leads you to expect.

WE SOLICIT YOUR ORDERS

F. Meyer & Bro. Co.

PEORIA, ILLINOIS

formulated by George F. Meredith, who had been retained to produce the plan by several business men. The tragic aspect of the undertaking was the fact that it was held with promises of strict anonymity for all participants. It was apparent that the businessmen present had an intense apprehension of reprisals from bigger business if their identity were discovered. The atmosphere of fear was the most amazing feature of the conference. Mr. Meredith crystallized the plan, which in essence provides that the National Independent Business Committee shall not duplicate or trespass upon the function of any existing organization, but shall help to coordinate any efforts which appear to offer opportunities for the common good of all. An anonymous committee of 21, chosen to represent all types of business in all parts of the country, will direct the policies of the committee. The committee will establish headquarters in Washington since it will do most of its work with Congress and Government agencies. It will maintain liaison with the 10,000 organizations scattered around the country in order that the efforts of these organizations and their members may be focused upon any work that will help all. It is expected to have an influence upon public thought, as well as upon Congress and the Government officials. Eventually it is hoped the committee will have a skeleton organization in every state. It is supported by funds supplied by individuals and by the organizations interested.

One of its major interests at this time is bill H. R. 3399, introduced by Congressman Harry Sheppard of California. It will make the Reconstruction Finance Corporation a very real bank for independent smaller business, and will function to secure for this group a substantial share of the money spent by the Government upon national defense and upon ECA and similar undertakings. The bill would provide at least $500 million to enable the RFC to make loans to smaller independent business units. It will be a very effective law if it is enacted. Much pressure will be needed to get it out of the House Banking and Currency Committee.

Heating Wholesaler—

(From page 71)

provided the wholesaler's own personnel with the background of engineering knowledge which is often needed to assist dealers with the design of large domestic, commercial, and semi-industrial installations.

It is obvious that the wholesaler has well-defined responsibilities if he wishes to make a place for himself as a distributor of heating equipment. He is required to accept the responsibilities of inventory, credit risks, local advertising, and sales promotion activities. When he accepts these responsibilities he can feel free to expect in return a definite policy from the manufacturer that will protect him from encroachment in his assigned territory. As a part of this policy he expects protection from the competition of a differently branded line by the manufacturer and sold within the territory.

Just as the manufacturer aims to have his whole-

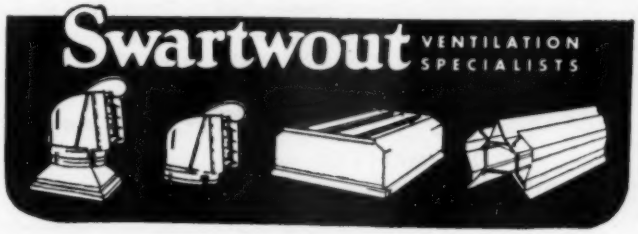
. . . Tell that to your customers — show them Swartwout JECT-O-VALVE

This modern powered roof ventilator clears out masses of heat, smoke and fumes from foundry, glass plant, forge shop, heat treatment rooms and other industrial buildings. You can recommend them for concentrated heat spots such as over vats, furnaces, pouring floors, etc. Ject-O-Valve is a powerful "straight-through" ventilator with many improvements, including convenient hinged top for easy servicing. You can lick any problem you are called upon to solve with one of the 28 different capacities. Write for more complete information.

6 Types of Swartwout Ventilators to Help You Increase Your Business

It's easier than ever before to sell modern roof ventilation. Swartwout Equipment supplies complete *natural* (gravity), or forced roof ventilation as needed. You can apply one or more Swartwout Ventilator types to factories, warehouses, garages, airport buildings, bus terminals, power houses—wherever hot foul air conditions exist. Write for Bulletin 324 describing the full Swartwout line.

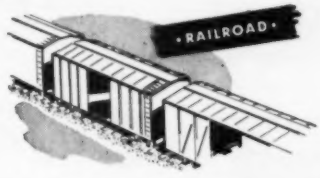
The Swartwout Company
18615 EUCLID AVENUE • CLEVELAND 12, OHIO



here's how ZINC SERVES YOU

Galvanizing (Zinc coating) insures long-time, low-cost service . . . protects property . . . saves money. For as long as iron or steel is coated with Zinc, *it cannot rust!* For satisfaction, use galvanized materials . . : they're "Sealed-in-Zinc" against rust.

TIME proves galvanized sheets stay stronger longer. Used as roofing and siding, they give buildings the "strength of steel" . . . the rust protection of Zinc. The "Seal of Quality" (above) is your guide to economy in buying galvanized sheets. It means they carry at least 2 oz. of Zinc per sq. ft. Galvanizing also lengthens fence life and service.



Galvanized products in railroad industry guard bridges, buildings, cars., etc., against rust.

Strength, workability and resistance to heat as well as rust, make galvanized sheets ideal for heating and air-conditioning.

FREE BOOKLETS

Fully illustrated and packed with practical information on galvanized sheets and Metallic Zinc Paint. Send for these *free* booklets, *today!*

AMERICAN ZINC INSTITUTE
35 East Wacker Drive, Chicago 1, Ill. Rm 2614

Send me without cost or obligation the illustrated booklets I have checked.

- ☐ Repair Manual on Galvanized Roofing and Siding
- ☐ Facts about Galvanized Sheets
- ☐ Use of Metallic Zinc Paint to Protect Metal Surfaces

Name_____

Address_____

Town_____ State_____

salers depend upon him as a constant source of supply, the distributor also aims to have his dealers depend upon him as their regular source of supply. If the wholesaler fulfills his necessary functions in the chain of distribution, then he is a definite and important link in the chain.

If he is a "fifth wheel," then wagons have been improperly designed for centuries.

Pension Plan—

(From page 75)

the money he has paid in to be forfeit. You must give it back to him, although naturally he gets no share of the part the company has put up. This entails bookkeeping worries and some additional expense, and it makes the pension plan function less efficiently."

Q. "Can hospitalization insurance be included in the plan under a single set-up?"

A. "Very easily. Writing policies to take care of your employees' sicknesses can be done with very little paper work and at small extra expense."

Q. "What about the employee who dies before he has reached retirement age?"

A. "If the employees also contribute to the pension fund, the share the deceased employee has paid must be given to his heirs. If you are footing the bill, you can make provision for paying the heirs of men who die by including group life insurance policies in the plan. The money to pay premiums on these policies can come out of the pension fund."

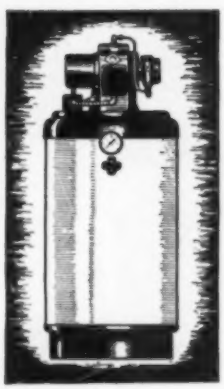
Q. "Which do you advise; a pension plan handled through insurance companies, or one handled by the trust department of my bank?"

A. "They are both good. In practice, there is little difference because the trust department of your bank will undoubtedly put some of the money into insurance policies anyway. For example, if you want to pay a death benefit to the employee who dies while working for you, the bank will buy insurance to take care of this. It matters little whether you go to a bank or to an insurance company. Both are experienced pension fund handlers."

Q. "How do each of these companies handle the pension fund?"

A. "A bank may invest the money in securities as it would do with any other funds it handled. The interest or dividends from the investments are plowed back into additional stocks and bonds. An insurance company often provides annuities in the name of the employees, so that at retirement age they receive money regularly just as they would from any other annuity insurance policy. Banks often do the same thing with the pension funds."

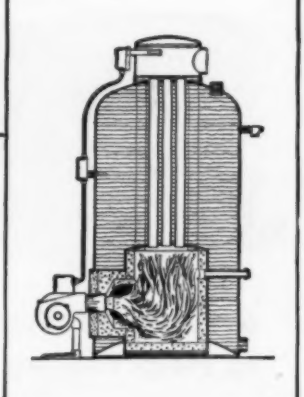
A prominent banker whose trust department handles dozens of pension systems has pointed out that, "No one plan will fit the requirements of all businesses, any more than a standardized will meets the needs of every man who has property that he wants to leave to others after his death. The best program is one made to order to meet the particular situation of the particular company."



2 EASY-TO-SELL, EASY-TO-INSTALL "PACKAGED" OIL BURNER UNITS built by JOHNSON

Dealers find these famous Johnson units especially profitable to sell because they fit the heat and hot water needs of so many buyers . . . and because they come completely assembled, ready to hook up to flue, wiring and water lines.

They are engineered and built to the extremely high standards of performance and efficiency which characterize the entire line-up of Johnson Oil Burners. You can recommend and sell them with complete confidence. May we send you a detailed description?



ECONOLUX 150-V BOILER-BURNERS

Provide abundant low-cost heat and faucet hot water for an 8-room house. Exceptionally compact . . . measure only 24" x 60". Small enough and attractive enough to be welcome in kitchen or laundry if no basement is available. Designed for use with either steam or forced or gravity hot water heating systems. Powered by famous Johnson "Bankheat Burner" with 150,000 BTU output. Faucet hot water is heated in super-efficient double-shell outer jacket on 150 VW models. On steam models 150-VS, faucet hot water may be had by installing Knapsack type heater at slight extra cost. Operation is completely automatic.

AQULUX WATER HEATERS

The hot water needs of anything from a 5-room house to a 500-room hotel can be filled perfectly with one of Johnson's time-tested Aqulux Water Heaters. There's a size and type for every need . . . for homes, restaurants, laundries, hospitals, factories. They deliver automatic hot water, year in and year out, at a cost per gallon that is difficult to match. If you have a water-heating job that must be handled right . . . check up on the performance and the profit possibilities of Aqulux Water Heaters.

Johnson Oil Burners

Builders of fine Oil Burner Equipment since 1903

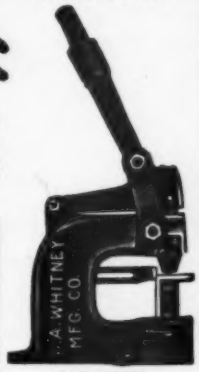
S. T. JOHNSON CO.
940 Arlington Ave., Oakland 8, Calif.
401 No. Broad St., Philadelphia 8, Pa.

WHITNEY LEVER PUNCHES

No. 4B PUNCH

Length 8½ inches. Capacity ¼-inch through 16 gauge. Deep Throat — 2 inches. Weight—3 pounds. Punches and Dies—1/16" to 9/32" by 64ths.

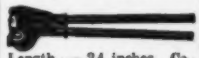
No. 91 PUNCH



CAPACITY

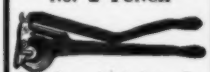
½-inch hole through ¼-inch iron; ¾-inch hole through 3/16-inch iron; 2-inch hole through ⅛-inch iron. Depth throat, 5 inches. Weight, 82 lbs.

No. 1 PUNCH



Length — 34 inches. Capacity — ⅜ - inch hole through ¼ - inch iron. Punches and dies in sizes from ⅛ to 9/16 by 64ths.

No. 2 PUNCH



Length — 23 inches. Capacity — 5/16-inch hole through ¼ - inch iron. Punches and dies in sizes 3/32" to ½-inch by 64ths.

No. 6 PUNCH

Length—26½ inches. Capacity — ⅛-inch hole through 3/16-inch iron; especially adapted for button punching or templet work. Punches and dies ⅛" to 9/32" by 32nds.

CHANNEL IRON PUNCH

Companion to No. 2 Punch. Every part of the two punches Interchangeable, including punches and dies. Capacity—¼-inch hole through ¼-inch iron.

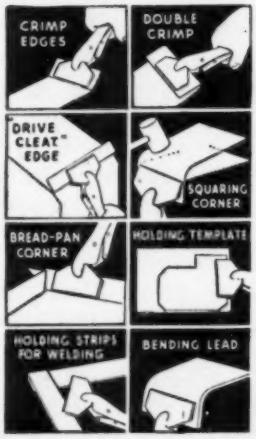
We have tools for every purpose needed by Sheet Metal Contractors.
Ask your Jobber

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

AIR-FLO
AUTOMATIC
CEILING SHUTTER
FOR ATTIC FAN
Built so they can be installed practically flush with the ceiling, AIR-FLO Ceiling Shutters present a refined, finished appearance. Their natural aluminum color blends with any decoration, eliminating need for painting, and no grille or winter cover is required. Furnished in 5 different widths, single panel up to 73" long. No operating mechanism shows. Built-in fusible link. Meets fire underwriters requirements.
WRITE FOR NEW CATALOG 43-C
Illustrations and details of the complete AIR-FLO line.

AIR CONDITIONING PRODUCTS CO.
2340 W. LAFAYETTE BLVD. • DETROIT 16, MICH.

Does More Perfect Forming EASIER



Here's that remarkable VISE-GRIP Sheet Metal Tool everybody is talking about! See how it LOCKS to the work with a grip many times greater than that of ordinary tools. Eliminates tiresome hand gripping. Now, you simply LOCK the tool to the work—and bend, form, seam, crimp, straighten—so much easier, more accurately, faster! Easily released. Or quickly adjusted for non-locking action.

Wonderful for holding templates, holding sheet metal for welding, working inside stacks, bending all kinds of materials. Extra deep throat—up to 1¾".

No. 8—8 inch, $2.95

If not at your suppliers, order direct.

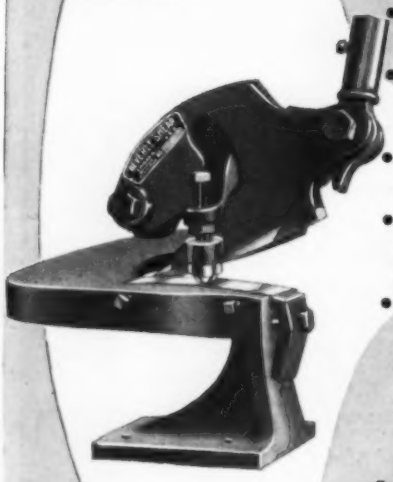
PETERSEN MFG. CO., Dept. AA-4, DeWitt, Nebr.

We can't show 'em 'til May —
But you'll like the new additions
to the Sphinx Line of Gas & Oil
Furnaces! They offer new beauty
— new performance — new profits!
EJM

P.S. — Alert dealers will want
to see and sell
the Sphinx Line!

MEMO
C. L. BRYANT CORPORATION
4610 ST. CLAIR AVENUE • CLEVELAND 3, OHIO

Beverly THROATLESS SHEAR

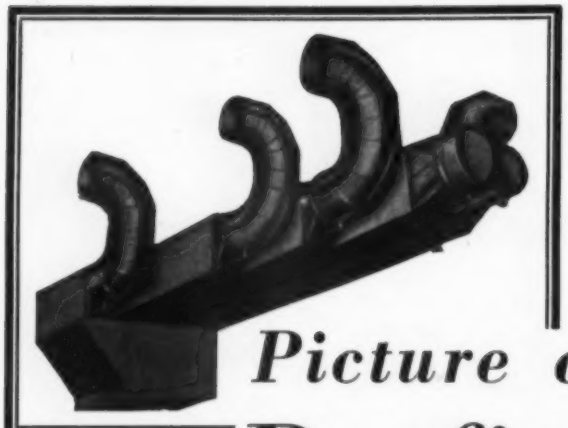


- UNIVERSAL . . . makes intricate, angular, radii and straight cuts with equal efficiency.
- Positive rake produces neat, clean edges free of burr.
- Free-cutting . . . handles lightest material without distortion.
- Compound leverage . . . great power with little effort.
- High grade tool steel blades adjustable for wear. Easily replaced.
- B-3 Model (illustrated) has ball-bearing hold down for easy control of heavier gauges. Beverly Shears also available with H.C. H.C. blades for handling Stainless.

See your Dealer . . . or write direct for information and illustrated Catalogs.

Made in 3 models to handle 14 gauge, 10 gauge and ¼". Welded, all-steel stands available for Beverly Shears.

The BEVERLY SHEAR MFG. Co.
3020 W. 111th St.
Chicago 43, Ill.



Picture of Profits!

Of course, our fittings are fabricated with extreme care and delivered to you with a minimum of delay—and when they are *"Made-Rite"* you know the job will be well done.
We are ready and anxious to deal with you and you'll be pleasantly surprised at the completeness of our line and dependability of our service.
We solicit inquiries on slitting of metal up to 36 inches wide and 14 gauge and lighter.

"Made-Rite" Co., Inc.

API-AGA Fuel Reserve Report—

(From page 87)

only after sufficient development of the field, and, in some cases, adequate production history. For these reasons, the reserves listed as discovered during any indicated by the drilling in that year. The estimated current year must be considered only as the reserves reserves of these new fields and pools will be revised in future reports and shown as "Extensions and Revisions."

Reliability of Report

The procedures followed in arriving at and assembling the reserve figures were the same as those used in past reports. The proved reserves may be in either the drilled or undrilled portion of a given field. Where the undrilled areas are considered proved, they are so related to the developed acreage and to the known field geology and structure that their productive ability is considered assured. Recoverable reserves of natural gas are the reserves estimated to be producible under present operating practices. Since the estimates are made by fields, the recovery factors or abandonment pressures used in the calculations were determined by the operating conditions of each individual field. Proved recoverable reserves of natural gas liquids are those contained in recoverable gas reserves and extractable by methods now in use.

In the preparation of these estimates, as in those of previous years, this committee has had the helpful cooperation of the Committee on Petroleum Reserves of the American Petroleum Institute. To that group this committee is indebted in large measure for the estimates of the dissolved gas reserves, which are based on that committee's estimate of crude oil reserves.

Advertising Answers—

(From page 76)

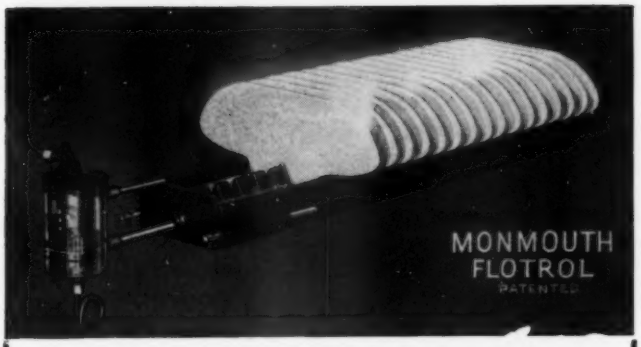
ing was that generally it pays to repeat the same ad (of course there is a point of diminishing returns).

The committee in charge of this test submitted its findings:

"A given advertisement secures attention from a random sample of those who read the publication in which it appears.

"When an advertisement is repeated, it is seen and read by at least an equal number of new readers who do not recall seeing it before. This holds true regardless of the frequency of insertion. . . As the time interval between repeated advertisements increases, the recollection of previous appearances (of the ad) decreases to the extent that in a weekly publication, advertisements repeated at four weeks or longer intervals have little accumulated recollections of previous appearances and approximately the same effect as the original insertion."

A chart prepared by this committee showed that many advertisements are up to 50 per cent more effective the fourth time they are run than they were when they first appeared.



For healthful operation, every heating system, new or old, requires a dependable humidifier. In Monmouth, superb engineering and careful craftsmanship assure the finest available. We make a complete line of humidifiers for all your needs:

- FLOTROL Humidifiers for warm air or air conditioning.
- MICRO-FEED—the simple, low-cost control for drip feed operation.
- Monmouth HUMIDITY CONDITIONER, gas-operated, for all radiator heated buildings.

The trivial extra cost for a genuine Monmouth, over inferior equipment, is more than made up in savings on service and repair charges. Thousands of satisfied users, hundreds of enthusiastic dealers. Get that EXTRA profit from the easy sale of Monmouth Humidifiers on YOUR jobs!

BULLETIN AND PRICES ON REQUEST

THE CLEVELAND HUMIDIFIER CO.
7802 Wade Park Ave., Cleveland 3, Ohio

MONMOUTH HUMIDIFIERS

80th Anniversary Year

1869 - 1949

REPAIR PARTS

for Stoves • Furnaces • Boilers

also

Armstrong Furnaces

Coal - Oil - Gas

with

Fittings - Registers - Supplies

Your Complete Heating Needs can be filled by buying

at

DES MOINES STOVE REPAIR COMPANY

Des Moines, Iowa
Since 1869

The Mercoid Way

You simply use your fingers—no tools whatever are needed. On either the Type M-41 Furnace Limit Control or the Type M-43 Furnace Fan Control, the adjustment mechanism is alike. This is only one of the many other features you'll like about Mercoid Controls.

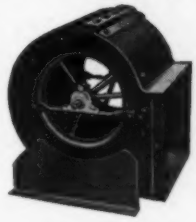
Write for Mercoid Catalog

THE MERCOID CORPORATION. 4203 W. BELMONT AVE. CHICAGO 41, ILL.

• BLOWERS •

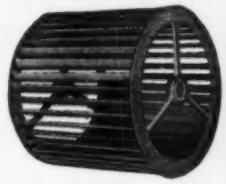
for

Air Conditioning Furnace Manufacturers



The *New* Bishop & Babcock Air Conditioning Blower Assembly Type "AC"—Design 2

The *New* Bishop & Babcock Blower Wheel For Air Conditioning Furnace Blowers

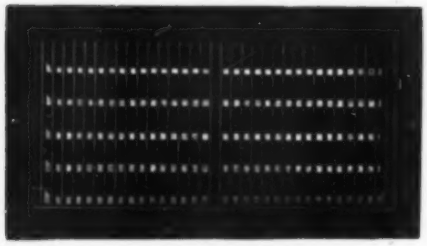


The *New* Bishop & Babcock All Stamped Housing Assembly and Component Parts

Write for Bulletin No. 115

MASSACHUSETTS BLOWER DIVISION
The BISHOP & BABCOCK Mfg. Co.
4901 HAMILTON AVENUE · CLEVELAND 14, OHIO

AIR-VANE FORCED AIR REGISTERS



Made By ROCK ISLAND . . . You Know They're Good!

No. 802 AIR-VANE Forced Air Register

Quality of equipment is essential to the performance and life of any modern forced warm air heating installation. You'll find that Rock Island's AIR-VANE Line will fill the bill for you on the most exacting jobs. They're constructed with vertical or horizontal vanes for right or left or downward deflection of air flow. Multi louvre dampers for closing and 15 degrees downward directional air flow are standard. This versatile model is also available with single louvre in wall or baseboard registers.

Check the complete Rock Island line . . . if it's a Rock Island Register you KNOW it's good.

ROCK ISLAND REGISTER CO.

2435 FIFTH AVENUE ROCK ISLAND, ILL.

PERFORMANCE PLUS!

ATH-A-NOR Furnaces and Parts

* * *

Performance is the yardstick for measuring the efficiency of any heating plant, and those that will operate year after year with little or no attention are the ones which will return you the most profit.

You're sure of top drawer performance when you install ATH-A-NOR Furnaces and parts exclusively. Over fifty years of furnace manufacturing experience guarantee you home heating plants with performance ratings and lasting qualities to satisfy the most critical clients. Investigate now . . . write for literature.

MAY-FIEBEGER COMPANY

Manufacturers of Quality Heating Equipment for Over Fifty Years.

Newark Ohio

Roberts—

(From page 73)

services under overhead, preferring to let it ride and swell the net profit. Unless he makes mental note of this fact when analyzing his profit and loss statement, (and some dealers do not), he gets the impression that his overhead expense runs 30 per cent of sales. This may be a reasonable ratio for dealers doing similar volume in territories of similar size. However, those dealers may be including compensation for their services in the overhead figure, hence, Johnson's burden is higher than average. Not realizing this, he is complacent and does not take steps to effect better cost control. "I'm all right on my overhead expense," he muses. "It's no higher than any of my competitors."

Owner's Salary Changes Picture

But, he would think differently if he put himself on the payroll for $3,000 a year or whatever was reasonable pay for his services. Then, this is how his condensed profit and loss statement would appear.

Sales	$50,000	
Cost of sales	30,000	
Margin on sales	$20,000	
Overhead expense—including $3,000 compensation for the owner's services	18,000	36 per cent
Net profit on sales	$2,000	4 per cent

His overhead expense is too high for the net profit he earns. True, he has no more money en toto at the end of the year, but he is not earning a satisfactory profit on sales. He must earn more margin by cutting the cost of sales, increasing prices or decreasing expenses. For this reason, it is imperative that all dealers include a reasonable compensation for managerial service under overhead expense. In more than one case, we have found that when compensation for such services had been deducted from the assumed net profit that the dealers were in the red or earning much less than they thought.

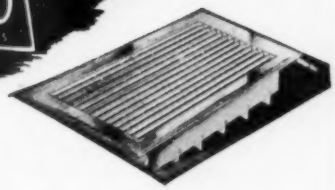
Nason—

(From page 109)

preparing and serving salads and sandwiches. It is fitted with refrigeration equipment to chill the foods which need cooling, has a spacious cutting board and a large bread storage compartment. There is a cover which can be swung over the food to protect it when the counter is not operating.

Another standard product made in this plant is the open end flatware bin that one sees in almost every restaurant. These are formed and soldered with four compartments to each unit. A counter like the one made for a railroad station will have seven such flatware bins distributed throughout its length. A bread box of 16 gauge stainless steel, highly polished is an-

NEW STANDFORATED
PERFORATION OF ALL METALS

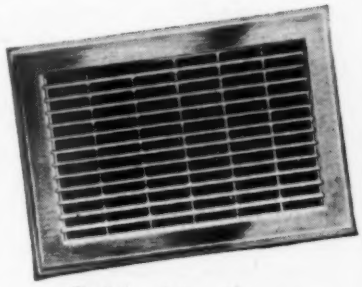


EFFICIENT!

newest -
finest -
strongest

beveled edges
fabricated metal
more free air space
solid construction
no loose parts
ultra-strong baked on oak finish, longer wear, matches flooring. Made in all standard sizes

Floor Registers



Cold Air Faces

- FORCED AIR REGISTERS—Prompt Delivery Standard Sizes
- MIRRO-GLO LINE Bathroom Medicine Cabinets
- PERFORATED METALS FOR EVERY INDUSTRIAL USE

Write for complete information and price lists

STANDARD STAMPING & PERFORATING CO.
3137 W 49th PLACE · CHICAGO, ILLINOIS

POWERFUL Turbo-Ventilation
but no power cost!

SPECIFY Western ROTARY TURBINE VENTILATORS!

- LIFETIME GUARANTEED ball bearings.
- 2 M. P. H. BREEZE keeps Western Turbines in operation. Constant 24 hour exhaust.
- ALL SIZES from 6" to 48" throat. Both bearings on same axis always stay in alignment—save trouble and delay from shipping jolts.

Write for complete catalog on all of Western's modern, carefully engineered ventilation equipment.

PLEASE MENTION AMERICAN ARTISAN

JOBBERS
Become part of our national distribution system. Details on request.

"Always on the job—never on the payroll"

WESTERN ENGINEERING & MFG. CO.
1726-28 E. WASHINGTON BLVD., LOS ANGELES 21, CALIF.

Automatic REZNOR gas fired unit heaters

TIME TO PLAN IS "NOW"

- Sell Reznor Heaters now.
- Easier to install.
- Avoid wintertime rush and delays.
- Make extra summertime profit.
- Reznors give summer ventilation from big, quiet fans.
- More Reznors in use than any other similar type.
- Write for Catalog U-45.

21 UNION ST. · MERCER, PENNA.

You, Too, Can Be a SUPER Man!

You don't need to know any magic words to enable you to perform feats that will amaze your customers—and yourself too. Try a Super Red Streak Furnace Cleaner 5 days free and prove it.

The Super Red Streak with its especially designed tools cleans furnaces and chimneys so quickly, efficiently, and easily it seems like magic. Start now to Super clean the winter's accumulation of soot and dirt from the furnaces in your community. You make a good profit and at the same time uncover repairs, replacement units, needed. Why not take advantage of our 5-day free trial offer. You keep what you make even if you don't buy.

National Super Service Co., Inc.
1944 N. 13th St., Toledo 2, Ohio

National Super Service Co. of Canada
Toronto, Ont. Vancouver, B. C.

GET YOUR FOOT IN THE DOOR

GET THOSE
HEATING PLANT REPAIRS
NEW INSTALLATIONS

Increase Sales Contacts with the
GRAND RAPIDS FURNACE CLEANER

Yes, here's your "in" to increased business and profits! The famous Grand Rapids Furnace Cleaner not only gets you into the customers basement but gives you an excellent opportunity to check over each heating plant as it is cleaned.

The Grand Rapids Furnace Cleaner puts you right where you can naturally recommend and sell necessary repair work and new installations.

The proven sales plan "A Plan to Increase Your Sales" leads the way to profits! The right to use this manual is reserved to users of the Grand Rapids Furnace Cleaner.

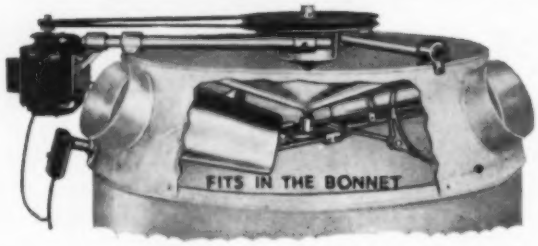
Write for free information today!

DOYLE VACUUM CLEANER CO.

227 Stevens St., S.W. Grand Rapids 7, Michigan

Now you can offer EVEN HEAT DISTRIBUTION and MAXIMUM FUEL EFFICIENCY with CIRCULATAIRE The New Improved Booster Fan for GRAVITY FURNACES

INSTALLED IN ABOUT TWO HOURS WITHOUT REMOVING BONNET



No baffles required — No new furnace pipes — No changes in existing ductwork — No wiring. CIRCULATAIRE not only overcomes cold rooms but also permits *Controlled Distribution of Heat* to each room as desired.

Thousands of homes with cold rooms—attic flats and other additions need this Low Priced booster fan.

SATISFIED CUSTOMER REPORTS

Mrs. W. H. S., Cicero, Illinois, recently converted the attic of her bungalow into an apartment and a heating problem developed; when the temperature downstairs was 76 degrees it was only 62 degrees upstairs. A "CIRCULATAIRE" was installed and now a balanced temperature of 72 degrees upstairs and down is easily maintained.

A COMPLETELY PACKAGED UNIT
Nothing for the dealer to furnish except limited amount of labor.

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other typical product. The door on this box is attached with piano hinges and construction of the entire unit is such that it should easily withstand years of hard usage.

Drinking water serving units for hospitals were observed in the process of production during our visit and this, too, is an interesting product. Made of 16 gauge stainless steel each unit consists of a boxlike housing, vertical back plate, faucet and drain plate. They are installed flush with the wall. Behind the unit a ½ in. brass water pipe is connected to the faucet and the pipe is secured by a stainless steel reinforcing plate. A union is all that is needed to connect the faucet to the supply lines.

Numerous other pieces of equipment for restaurants, cafeterias and hospitals were in various stages of production in this plant at the time visited. Many were more or less standard in design but some of the equipment clearly showed the benefit of the ingenuity that the engineering department at Federal has gained through experience at solving special problems of fabrication. Specialization in a particular metal, and the resultant familiarity with its potentialities, makes it possible for a fabricator to do things with it that others would never think could be done.

Temperature Distribution—

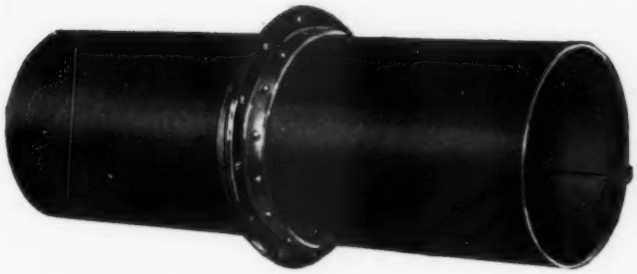
(From page 92)

correlation between the value of the quantity $(DT_2/DT_1) \times 38$ and the prevailing weather nor with the wind direction or velocity even though it was expected that a strong wind would produce a greater temperature difference between levels in the structure because more heat was required.

Consideration of the methods of heat transmission from a house suggests that the temperature distribution attained in a house with a heating system depends not only on the design of the heater and the distribution system, but also on the construction of the house. It is considered probable that the vertical temperature differences and, to some extent, the horizontal temperature differences attained with a given type heater and heating system will depend on the materials used in the walls, ceiling, and floor, the amount of insulation used in these elements, the amount of window area in the house, whether a basement or crawl space is used under the house, whether or not all of the rooms are on one floor, the arrangement of the rooms, and perhaps other factors.

Certain types of heaters may be suitable for houses of one construction and not suitable for other constructions. For example, a high temperature near the ceiling would not cause much additional heat loss if the ceiling were well insulated, or an insulated floor might permit the use of heaters that do not deliver warmed air at or near the floor level. Furthermore, some types of heaters that provide comfort in areas where extremely low temperatures do not occur, may not provide comfort in colder climates.

The data reported herein were all obtained with the same wall construction, the same degree of insulation, and the same arrangement of interior partitions, so



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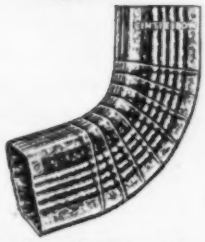

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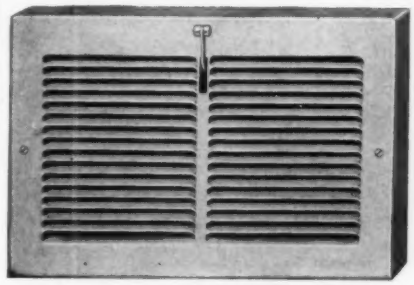

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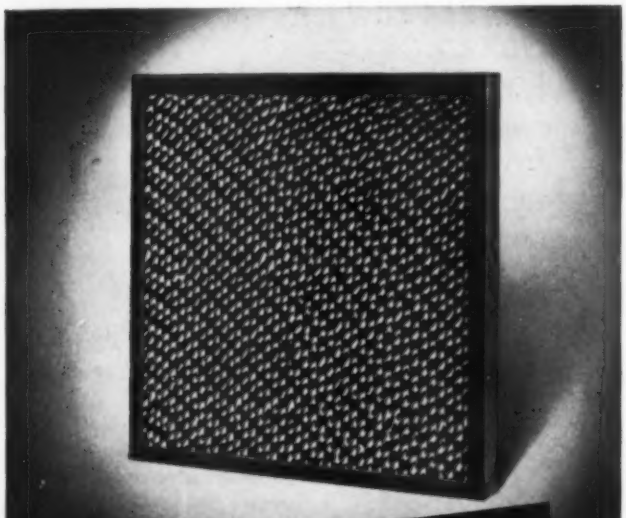

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that the data are directly comparable. Data on the effect of wall insulation, floor insulation, weather-stripping, storm windows, and other variables on the temperature distribution, are needed to provide a more nearly complete study of temperature distribution, but these phases of the subject were not taken into consideration during the present program. It is probable that lower temperature differences than those reported herein can be attained with the same heaters in houses of different construction and that a wider variation in temperature might be produced in other houses.

While no standards of performance in the field of vertical or horizontal temperature differences in residences have been established, these tests indicate that the air temperatures in the living zone of all rooms should range from 65 to 80 F for comfort when heated by the conventional types of heating systems.

A floor temperature of 60 F, when continued for 1 hour or more, was found to be too low for foot comfort; when a floor temperature of 65 F was continued for the same period, discomfort was no longer apparent. It was further observed that air temperatures of approximately 85 F around the level of the head became oppressive, especially if the air had an appreciable velocity. Of course, variations in the humidity of the air and the presence of a large amount of radiant heat or a large amount of cold window surface might alter these observations on comfort.

The test results obtained with the devices used in the test bungalow indicate that further improvement in the design of house construction and heating systems is necessary in order to provide comfort in all rooms of basementless houses. A more nearly uniform temperature distribution can probably be obtained either by the use of more insulation in the house elements, by improving the heat-distribution systems, or by a combination of both.

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ASHVE Guide, 1945 ed.

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Ohio Convention—

(*From page 119*)

Mr. Robbins opened by giving a brief history of the Reynolds Metals Co. and its methods of operation in research, production, and marketing. He told of the sales advantages claimed for aluminum over other metals more familiar to sheet metal men in this application. A color film was presented which showed the fabrication and application of aluminum roof drainage products. As a clinching argument Mr. Robbins cited

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actual cost figures for aluminum drainage products as opposed to other metals longer in the field.

George Boeddener, secretary treasurer of the National Warm Air Heating and Air Conditioning Association, appeared next on the program and startled the convention by taking a picture of the trade paper photographers after they had snapped him. This was his way of demonstrating that this is the year it will be necessary to fight back for the sales dollar. He then continued to describe the benefits to the dealer of the Continuous Air Circulation program and the other activities of the association. One of the more important projects under way is the study being conducted by the low cost house heating committee to find the most economical method of heating the small houses that may become more numerous as a result of the continuing high level of building costs.

W. J. Baak, Minneapolis-Honeywell Regulator Co., had the difficult assignment of explaining the application of electronics to control systems in the heating industry. He began by explaining the electronic tube and the way in which it is used to perform work when a signal sets it in operation. The new electronic thermostat was analyzed and its simplicity was brought out by the fact that it consists of just a winding of temperature sensitive wire which signals changes in the heat requirements of the occupied space. The fact that the heat sensitive mass is so small adds to the accuracy of operation of the thermostat.

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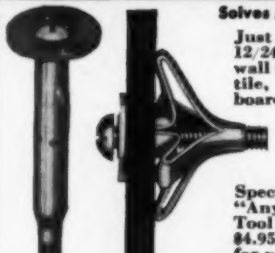

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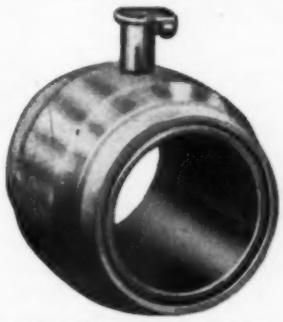

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the gas burner the ability of the flame to conduct electric current is utilized to produce a signal which will shut off the fuel supply, if the burner stops functioning properly. A photoelectric cell is used to perform the same duty in an oil burner application.

Richard E. Walsh, president, and J. D. Wilder, executive secretary of the Sheet Metal Contractors' National Association next combined their talents to bring the contractors present up-to-date on the various activities of the association. Labor and trade relations activities were reported and the speakers made clear the progress that has been accomplished in these fields in recent months. Two subjects which came in for emphatic treatment were the code of fair practices which has been developed for architects and engineers, and the recommendations which the association is preparing to make to the National Security Resources Board in answer to its request for ideal operating regulations for the industry under wartime conditions. The NSRB has been requesting such recommendations from all types of industry in order to have workable plans ready if war should come.

The code of fair practices mentioned has been drawn up as a means of adding stature to our industry and making clear to architects and their engineers just what type of work is done by the heating and sheet metal contractor. Another subject more or less related to this one is the National Joint Board for the Settlement of Jurisdictional Disputes. The manner in which this board operates was explained and it was brought out that when an industry wins an award, it is permanent unless the members of the industry neg-

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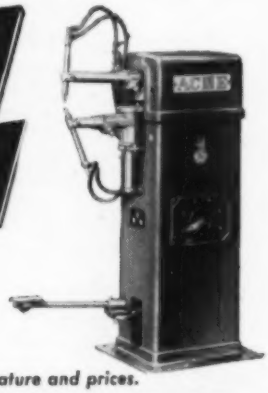

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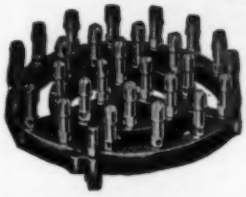

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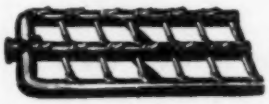

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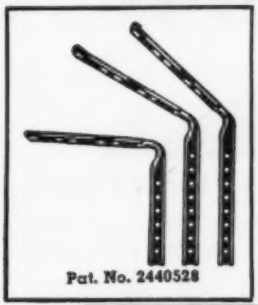

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lect, or refuse, to do the type of work for which the award was made. Application of steel decking has been awarded to the sheet metal industry and the association will notify its members immediately when any new awards are made. The installation of packaged air conditioning units is one major case that will be decided in the near future and contractors should plan to go after all such business if this industry secures the award.

Tuesday evening, March 8th, was set aside for the annual banquet and the featured speaker was Rev. Harvey C. Hahn, Dayton, who gave an inspirational talk well laced with humor. The title of his talk was "Burnt Matches" and he stressed the need for a return to self-reliance and willingness to work before the present day ills which beset us will be overcome.

Wednesday morning, March 9th, the final business meeting of the convention was held and reports of the committees were heard. The new directors were appointed and they later chose the officers of the association for the coming year. One of the resolutions proposed by the resolutions committee provoked some discussion. It asked the appointment of a legislative committee to study the proposed bill to bar the public utilities from the retail selling field in Ohio. The committee was then to report and recommend appropriate action. After some discussion this was accepted and the association then voted a statement of policy condemning the operation of the public utilities in the retail selling field. Adjournment followed.

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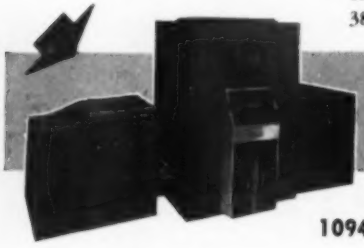

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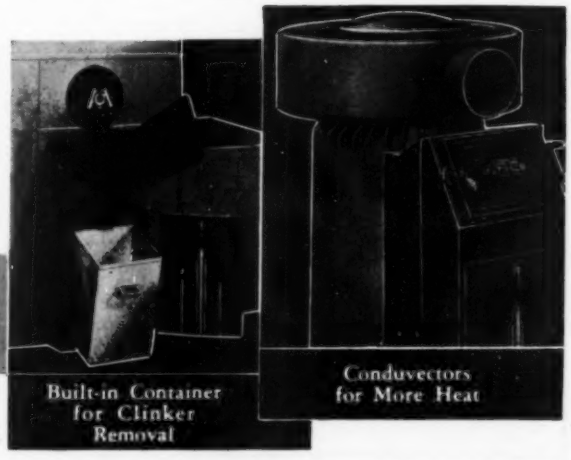

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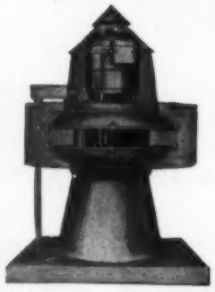

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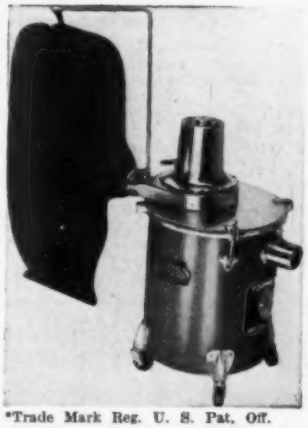

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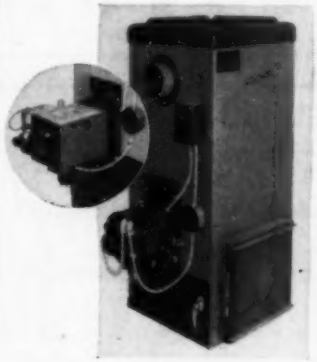

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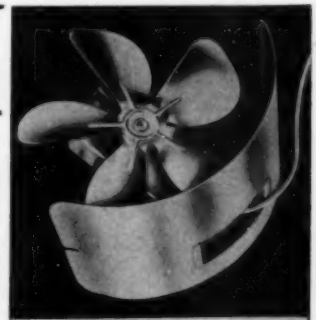

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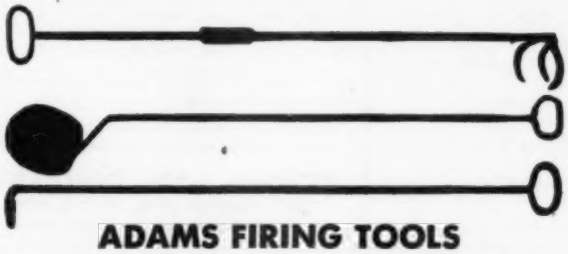

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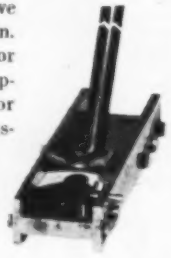

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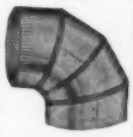

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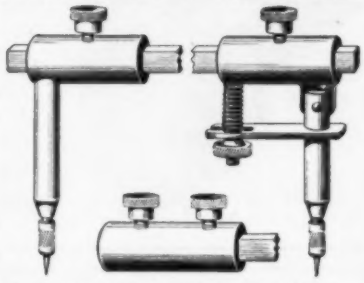

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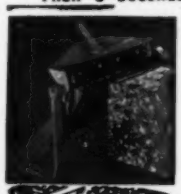

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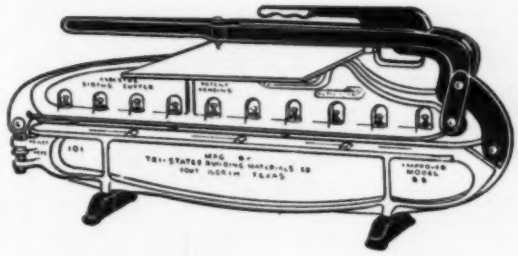

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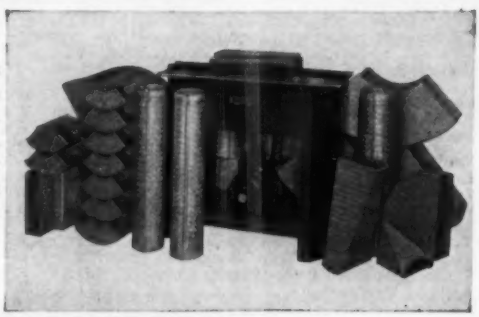

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